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4 March 1983

JAPAN REPORT

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ECONOMIC

TOP MANAGEMENT PEOPLE IN JAPAN SKETCHED

Tokyo WILL in Japanese Jan 83 pp 66-73

[Article by Jitsuo Tawara: "Stereotype Japanese-style Leadership Illustrated"]

[Text] Characteristics of Japanese Leadership

Marked Importance of Consensus

Recently a sense of incompatibility with the leadership introduced from the United States has accompanied the overseas advances of Japan's enterprises and difficulties with native management in foreign countries have increased; the distinctive characteristics and the strengths and weakness of Japanese-style leadership are regarded as problems.

Taken in the abstract, this is very true. It is widely asserted that superior leadership is common both to the East and the West. However, there is definitely a tendency among businessmen who say "proof is better than argument" to be very aware of the differences rather than the similarities of the Japanese uniqueness in the leadership of Japan's enterprises.

What is often being said here is the importance of decision by consensus reflecting the thinking of many interested parties, including subordinates, from the bottom-up in contrast to the top-down decision making found in Europe and the United States. Participative decision making is being emphasized in Europe and the United States as a need of the times, but there is a huge gap between that reality and Japan. This is substantiated by the fact that leadership based on the importance of consensus stands out as a distinctive Japanese-style trait.

Japanese-style Communication Lateral Instead of Straight Line

Many areas of Japanese-style leadership can be discussed in comparison with the United States. There are some fairly great differences when one looks at the daily behavior of top management. The greatest of these is perhaps the way of collecting and exchanging information in order to support decision making by consensus. In the United States, there are many more meetings and

informal exchanges of important information between top management and managers. However, it is limited to a few specific persons carefully tied together on the basis of their positions. Moreover, top management is argumentative and directive, presenting its own ideas rather than discussing ideas; and if its opinions are opposed, it rejects compromise and aims at a consensus through persistent persuasion. Likewise, inasmuch as that is not possible, its ability as top management is discredited.

In contrast to this, for the most part, the problem is presented and then discussed in Japan. Top management is extremely zealous about gathering information from inside and outside the company all the way down to the final facts, and then they themselves move energetically. As has been often pointed out, taking time for normal deliberations which lay the groundwork, rather than meetings, has no comparison in the United States; and the interchange after work hours is indispensable for information gathering and deliberation.

In the United States, the basis is a strong top-down line of communication; in Japan the basis is a lateral communication.

Necessary Qualifications for Leaders

Popular Person Rather Than A Genius

Naturally, there are definite differences between Japan and the United States even in terms of the necessary skills for an excellent leader. First of all, there are many common traits among executives, such as extensive knowledge, loyalty to the company and organization-building skills. But in addition to these, in contrast to the U.S. image of a person who accepts challenge undauntedly and innovatively and who is intensely individualistic, in Japan innovation is moderated and human relations skills and, above all, popularity within the company are given great importance.

Moreover, even with managers, the ability to express oneself and the ability to tolerate stress are considered important in the United States, but these are not particularly important in Japan. Instead, a sense of responsibility and a spirit of cooperation are given importance. In Japan, unity from a uniform spirit of cooperation and the order associated with it, as well as the sense of responsibility, are Japanese-style traits. This way of looking at things does not make much of an impression in the United States.

The commonly held distinctive characteristic of Japan's ideal leader is that even if a person is quite competent, he is unqualified unless he is modest and respects everyone. There is a tendency to accept an ordinary person rather than a capable person who is pushy. A combative talented person who is brilliant and full of a pioneer spirit would probably not become a founder of a company and, in fact, would be looked upon as anathema in a large enterprise. A spirit of cooperation is viewed as important in middle management and personal character and popularity are considered important in top management.

Looking a little more closely at the phenomena of the ideal leaders in Japanese enterprises, there are great differences depending on the level of the leaders. In the case of section chiefs, professional knowledge and skill are most important, motivation is second, and the relative importance of human relations management is low. But for the manager, development of subordinates is required along with technical knowledge and expertise; over and above that, planning and creativity are required. Furthermore, for directors, foresight is most important; planning ability is second; and development of subordinates and personal character are third in importance.

Promotion is said to come because of academic career and longevity. But the relative importance of longevity is great up to the level of section chief. At the manager level, the major decisive factors are the promotion of the business in addition to creativity in one's specialty and how much one is able to nurture his subordinates. At the director level, it is foresight rather than a specialty; and the turning point is whether he can develop his subordinates by throwing problems to them based on his wealth of ideas.

In summary, the strict manager-director image as someone courageous with his superiors and a teacher to his subordinates is the image of a person who gets approval for his own new ideas by appealing to his superiors and nurtures his subordinates by letting them wrestle with those ideas and leaves his mark on the achievements of the work site. As for popularity within the company which is considered important by Japanese executives, it must be said that popularity points to an accumulation of these two accomplishments.

Real Image of Japan's Leaders

Image of Top Management From the Aspect of Personality

Well then, what is the real image of a leader? Aptitude as a leader is a matter of management suitability versus line suitability. Thus, a person is either suitable or unsuitable in terms of personality. There is the deep-rooted image that "an introvert is unsuitable as a leader."

The image conveyed by the words introvert and extrovert to the common man differs, but in the personality classifications of the TI tests widely used in Japanese enterprises, extroverts are predominant in a ratio of 2 to 1.

However, as for other characteristics, 8 out of 10 are overwhelmingly both independent instead of receptive in dealing with the environment and rational instead of emotional in judgment. There is a 50/50 ratio of those who are practical and those who are theoretical.

The image of the average executive is a man who is subjective, logical and extrovert, but may be either theoretical or practical. It can be said that 1.) a receptive type who is also an introvert and 2.) an emotional type who is also theoretical would be unsuitable for top management.

However, the type of adviser preferred by top management is somewhat different. As advisers, they are decisively extroverts and rational men whose emotional ups and downs are few, and they are practical rather than theoretical. Although it is not necessarily true that a subjective person is preferred, there are many top executives who prefer the receptive, submissive type. The introverted, theoretical person is more unsuitable for the role of adviser than for a top management position.

Weaknesses of Japan's Leaders

To what extent enterprise leaders, starting with top management, actually exhibit leadership differs depending on the criteria; this is difficult to say. But according to evaluations by subordinates, at the very most 2 out of 10 executives, directors and managers are given an AA rank. Five are ranked A; less than 2 barely make a B rank; and less than 2 hopeless fellows get a C or D rank.

This nearly conforms to the ratio of the often stated rule of 2 at the top, 6 in the middle and 2 at the bottom. The latent weak point in this is the weakness of the appeal to superiors and involved parties. There is a rather strong tendency to follow precedent, not exceed the limits of safely carrying out the set method of management, flee from any new departure and subscribe to the principle of peace-at-any-price.

With the era of change, foresight and planning ability are very much required by directors and managers, but in fact there are many directors and managers who lack the ability and willingness to respond to that. This is not only a weakness in directors and managers but also in top management. Carrying this to the extreme, the ability to set forth brilliant concepts and plans so as to present subordinates with a dream and motivate them is lacking in directors, managers and top management. This is a common weak point among Japan's leaders.

Planned Nurturing of Leaders

Outdatedness of Leaders Spreads

The common weakness of today's leaders, not only in Japan but also in Europe and the United States, is an outdatedness in skills. This outdatedness in skills has become a problem with both technical personnel and managers in Europe and the United States; Japan is no exception.

First of all, concerning the technical fields, the trouble with technical personnel, including managers, is that they themselves are unaware of their own outdatedness; and these are the people in charge as leaders. Subordinates have no confidence in these transformed Taro Urashima-like leaders (Taro Urashima is a character in a Japanese Pandora's box fable); their leadership declines.

The current outdatedness which changes in business and the high level development of various professions have brought about is a problem for 1.) the generalist whose level of specialization is low and 2.) the specialist with a narrow specialty field for whom the areas where he can make use of his speciality have disappeared because of strategic changes and for whom a transition is not possible. And those who are able to exhibit leadership in this era of change are the multi-specialization specialists whose area of expertise is broad. It may be said that this is a precondition for today's leaders.

Foresight, planning ability and conceptual ability cannot come from outdated brains. But because leaders in high positions do not perceive their own outdatedness, outdatedness advances more and more. Even though there are leaders who study with humility despite their age, it cannot help but be said that the aging of leaders is gradually lessening leadership in the enterprises.

Problems in Nurturing of Leaders

Historically, the leaders of enterprises as represented in the executives have gone through the era of academic careerism which is descended from the era of social position and have now entered into a new stage, the present era of higher education and lifetime education. Even now, there are those who support academic careerism; in the top ranked enterprises there is a concentration of those who came out of the top ranked universities; therefore there are many who came out of the top ranked universities in the executive-management levels.

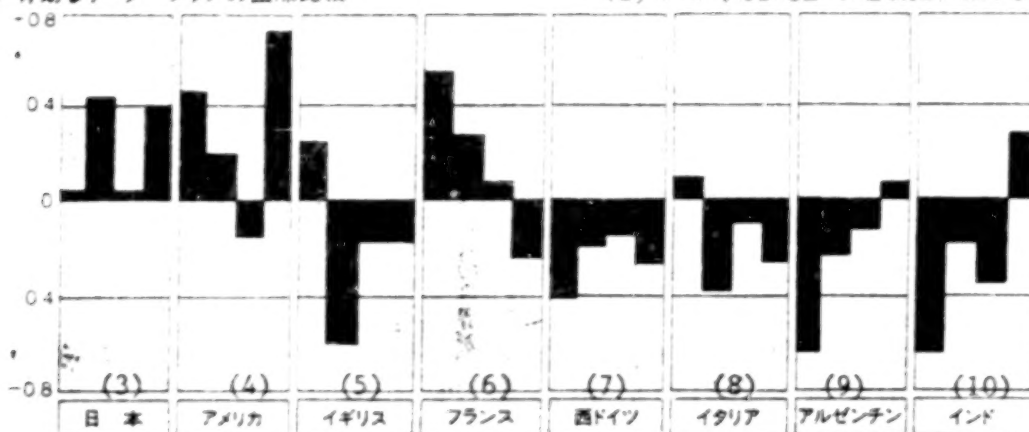
The problem is in the method of nurturing employees after they enter the company. In large European and American enterprises, the planned development of top management by narrowing the group down to a few management candidates is carried out starting with employees in their late 20's. But there are few enterprises in Japan which carry out a planned development except for second generation chief executives; and even when it does take place, it begins after they have reached age 40. This was done in Japan prior to the war, and there are many present high caliber chief executives who were brought up in such a way.

There is a strong opposition to nurturing an elite, but from the viewpoint of international competition, Japan's top management is inferior to top management in Europe and the United States in terms of skills. A situation of being unable to compare favorably will continue and there is great apprehension that this will become a serious matter. This is perhaps the greatest remaining problem for Japan's enterprises.

(Charts without a source listed were compiled from various materials.)

(1) 有効なリーダーシップの国際比較

(2) M・A「管理者の業績」の国際比較 94年 12

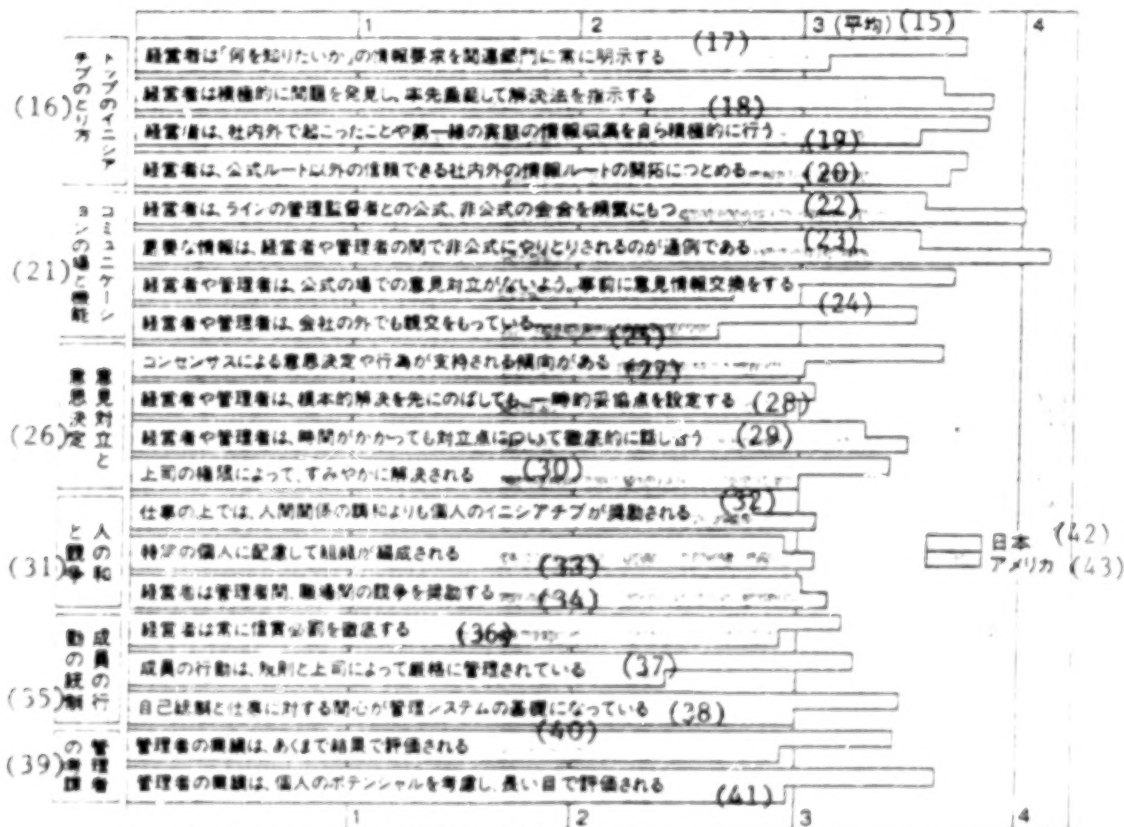


(11) 細部指示方式の有効性 (プラス=有効)

(12) 決定への参画と集団決定の有効性 (プラス=有効)

(13) アメニティ方式の有効性 (マイナス=有効)

(14) リーダーになるのは大衆とは別の人 (マイナス=有効)

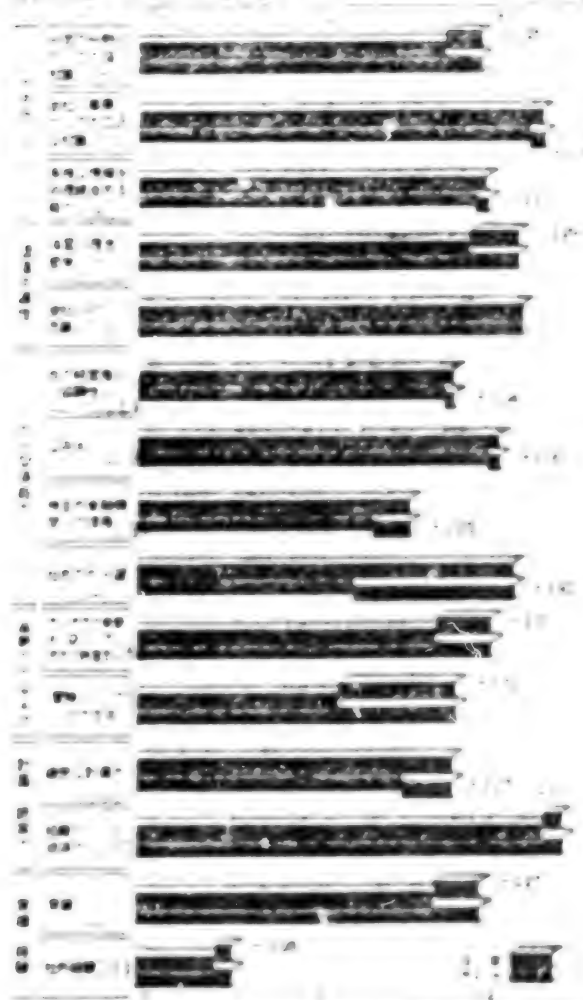
日本 (42)
アメリカ (43)

Key;

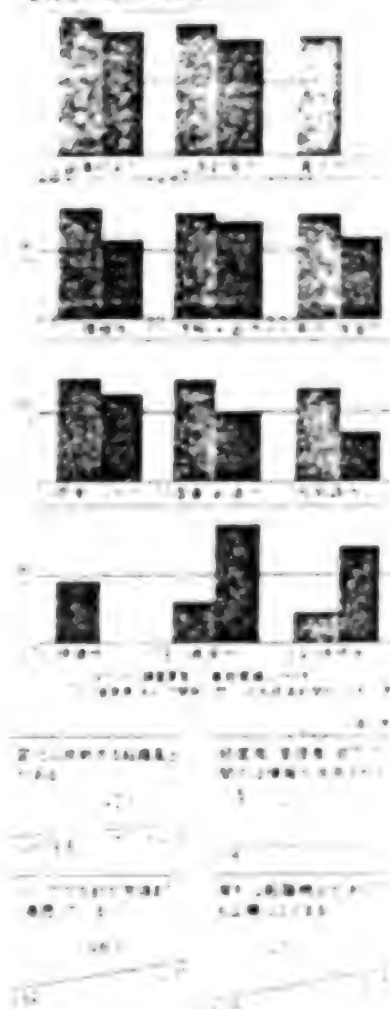
1. International Comparison of Effective Leadership
2. "Awareness of Managers---An International Comparison" 1969
3. Japan
4. America
5. England
6. France
7. West Germany
8. Italy
9. Argentina
10. India
11. Effectiveness of the style of giving directions on details (minus = effective)
12. Effectiveness of participative planning in decisions and collective decision making (plus = effective)
13. Effectiveness of carrot-and-stick method (minus = effective)
14. Leaders are those other than from the general population (minus = true)
15. (average)
16. Initiative-taking by top management
17. Top executives usually state clearly the information request to related departments.
18. Top executives actively search for problems, set an example of initiative-taking and point out the methods of solution.
19. Top executives themselves actively carry out information gathering about what has happened inside and outside the company and actual conditions among the first line workers.
20. Top executives endeavor to develop the information routes inside and outside the company which can be trusted in addition to the formal routes.
21. Location and function of communication
22. Top executives frequently hold formal and informal meetings with line supervisors.
23. Important information is normally exchanged on an informal basis between management and supervisors.
24. Executives and managers exchange opinions and information in advance so there will be no confrontation of opinions on formal occasions.
25. Executives and managers maintain friendly relations outside the company.
26. Opposing Opinions and Decision-making
27. There is a tendency to support decision-making and actions based on consensus.
28. Executives and managers set up tentative points of compromise even though they put off the basic solution until later.
29. Executives and managers discuss thoroughly the points of difference even though it takes time.
30. Solution takes place immediately on the authority of one's superiors.
31. Harmony and Competition
32. Individual initiative is encouraged on the job instead of harmony in human relations.

33. Organization is established with consideration for specific individuals.
34. Executives encourage competition between managers and between job sites.
35. Control of members activities.
36. Executives usually make exhaustive use of punishment and reward.
37. The members' activities are strictly controlled by rules and their supervisors.
38. Self-regulation and concern for the work are the basis of the management system.
39. Manager's evaluations
40. Manager's achievements are evaluated strictly on results.
41. Manager's achievements are evaluated on a long range basis with consideration for the individual's potential.
41. Japan
42. United States.

이동형, 동양사상에서 유래한 것



이동형, 동양사상에서 유래한 것



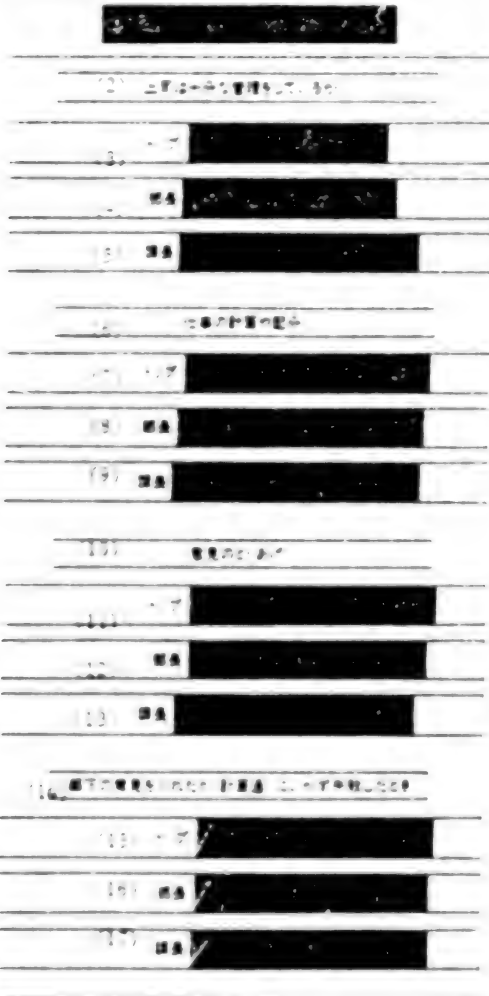
Key:

1. Japan-U.S. Comparison of Skills Required for Executives
2. "Soshiki Kagaku" /Organizational Science/
3. Generalist
4. Detailed knowledge of one definite field
5. Extensive knowledge about the company and its business
6. Ability to process and integrate various information
7. Value leadership
8. Strong ideology and philosophy
9. Loyalty to the company
10. Personal relations skills
11. Ability to cooperate with other executives
12. Fairness
13. Confidence in shareholders and financial agencies
14. Popularity within the company
15. Innovative initiative
16. Originality of ideas and tolerance of new ideas
17. Adventurous spirit and inclination to risk
18. Planning and ability to lead
19. Detailed planning ability
20. Leadership ability in organization-building
21. Achievements and experience
22. Achievements
23. Experience outside the company
24. Japan
25. U.S.
26. Assessment of Managers' Skills
27. Japan
28. United States
29. Ability to assume leadership
30. Planning ability
31. Sense of responsibility
32. Enterprising spirit
33. Management and judgment ability
34. Performance and ability to promote
35. Negotiation and receptivity
36. Spirit of cooperation
37. Sense of order
38. Expressive ability
39. Durability
40. "Rikuruto Chosa Yoran" [Recruitment Investigative Survey] Jinji Kyoiki-hen 1980 "Kyaria Kaihatsu Nymon" [Career Development Manual] by Jitsuo Tawara, Nihon Keizai Shimbunsha 1980.
41. "Soshiki Kagaku" [Organizational Science]
42. There is an organizational climate which defies change.
43. Information is held in common by executives, managers and subordinates
44. Japan
45. United States
46. The policy of top management permeates everything.
47. People remain even with opportunities for advantageous career changes.

Key:

1. Differences in Requirements for Managers based on Class
(Important requirements; top three levels)
2. Director promotions
3. Manager promotions
4. Section chief promotions
5. Academic career
6. Years of continuous employment
7. Achievements
8. Professional knowledge and skills
9. Skill development of subordinates
10. Control of human relations at the work site
11. Personal character
12. Motivation
13. Planning
Creativity
14. Foresight
Insight
15. Skill Development Report No. 63 (Human Skills Development Center 1980)
16. Changes in composition of academic career of managers within major enterprises.
17. 1950 (Aonuma Survey)
18. No totals
19. 1964 (Tokyo Kyoiku University Survey)
20. 1978 (Iwauchi Survey)
21. Tokyo University
22. Kyoto University
23. Hitotsubashi University
24. Other former imperial universities
25. Waseda University/Keio University
26. Ryoichi Iwauchi "Gakureki shugi wa hokai ka" 1980
27. Totals from public universities
28. Totals from private universities
29. No university background
30. Totals from public universities
31. Totals from private universities
32. No university background
33. Totals from public universities
34. Totals from private universities
35. No university background

経営者の性格タイプ



日本の経営者の性格タイプ



Key:

1. Management methods from the perspective of subordinates
2. Does your supervisor manage satisfactorily?
3. Top management
4. Directors
5. Managers
6. Planning and allocation of work
7. Top management
8. Directors
9. Managers
10. Acceptance of opinions
11. Top management
12. Directors
13. Managers
14. Subordinates' opinions are accepted but not following plans ends in failure.
15. Top management
16. Directors
17. Managers
18. Personality Types of Japanese Executives
19. Extrovert
20. Receptive (flexible)
21. Independent (steadfast)
22. Introvert
23. Emotional
Individualistic
24. Theoretical (planning)
25. Practical (action)
26. Rational
Reasonable
27. "Gekkan Rikuruto" ["Monthly Recruit"] June 1980

1. 最も単純な状態。頭の中は空である。
 2. 最も単純な状態。頭の中は空である。
 3. 最も単純な状態。頭の中は空である。
 4. 最も単純な状態。頭の中は空である。
 5. 最も単純な状態。頭の中は空である。
 6. 最も単純な状態。頭の中は空である。

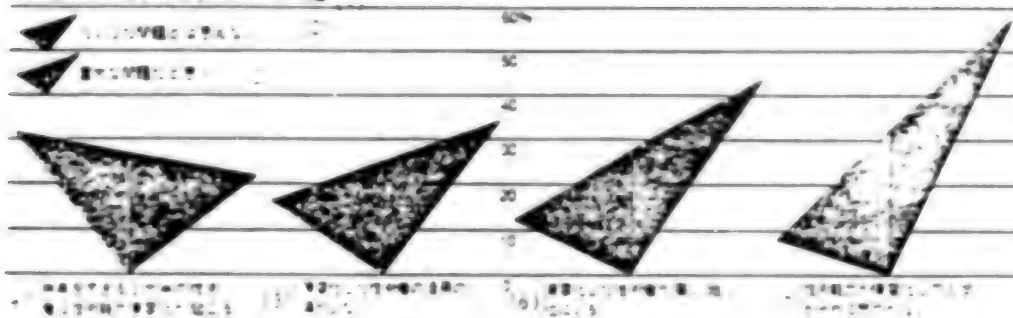


Key:

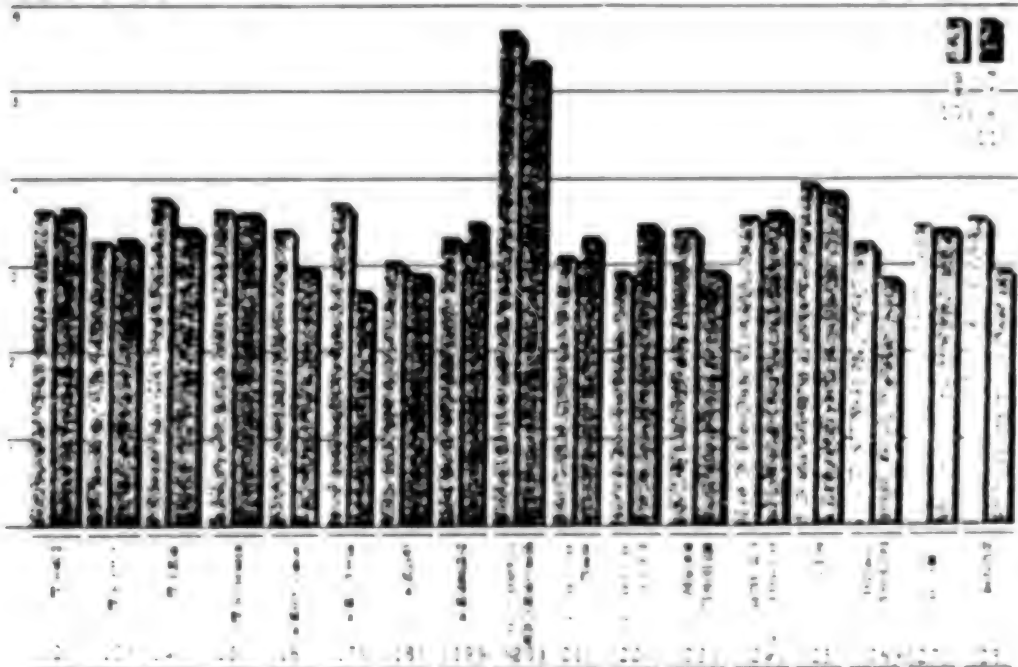
1. Skills Lacking In Top Management
2. The ability to maintain flexible judgment in answer to changes in the environment and to lead innovation within the company.
3. The ability to choose new projects, plan and guide them to self-operating growth.
4. The ability to develop and nurture the executive group.
5. The ability to secure the active participation of all members and a sense of sufficiency
6. The ability to assess oneself as a member of a collective leadership and make appropriate contributions to the whole.
7. The ability to be broadminded and lead so that the enterprise can contribute to society.
8. Skills Lacking in Managers
9. Ability to exhibit a flexible judgment in answer to changes in the environment and to lead subordinates.
10. The ability to discover problems independently and devise solutions for them by appealing to those around him.
11. The ability to grasp the feelings of subordinates, promote team work and lead them to put themselves into the work.
12. The ability to develop subordinates.
13. The ability to set targets and provide guidance based on the objectives.
14. The ability to be considerate in the selection of personnel and back up subordinates and to bring out skills in subordinates.
15. MITI "Kigyojin Kyoiku No Kihonteki Bijon" ["Basic View of Company Personnel Education"] 1974
16. Comparison of Skills Between 40 Year Olds and Senior Employees
17. Physical strength, stamina, tenacity, concentration
18. Aggressive desire to challenge difficulties and adventures
19. The ability to observe events from a new perspective and detect problems and solution hints.
20. The ability to learn open-mindedly from everyone and to continue to have a flexible attitude.
21. Knowledge and skill to be able to function academically and internationally.
22. The ability to detect and grasp problems which can detect present and future problems.
23. The ability to be sensitive and receptive to changes in the environment and circumstances and to grasp the important points of dealing with them.
24. The ability to accurately grasp the feelings of subordinates and younger employees, promote team work and lead them to put themselves wholeheartedly into the work.
25. The ability to distribute work so as to bring out and nurture the skills of subordinates and younger employees.
26. The ability to analyze and correctly understand the organization's situation from many angles, establish appropriate countermeasures and carry out decision-making.

27. Considerable/somewhat
Response of those under 50 years of age
28. Considerable/somewhat
Response of those over 50 years of age
29. Assessment of 40 year olds
30. Assessment of those 55-60 years of age

住宅地の住宅地化率の推移

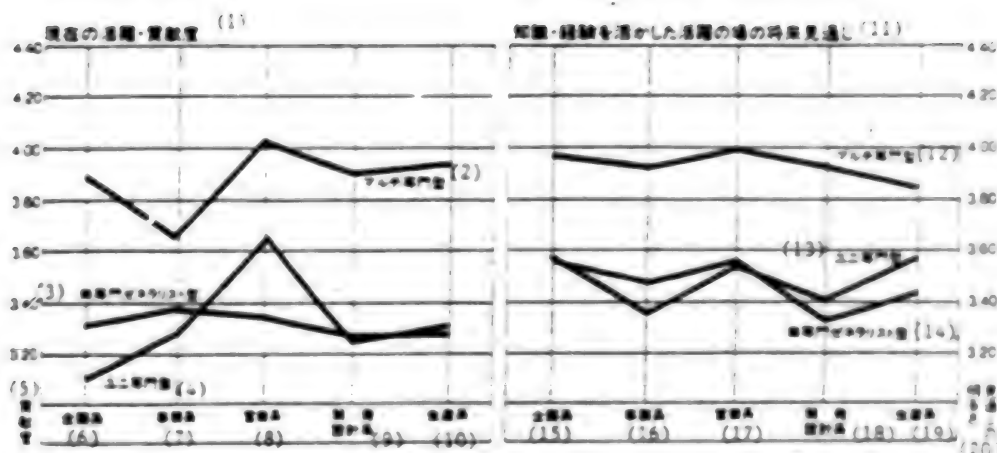


住宅地の住宅地化率の推移

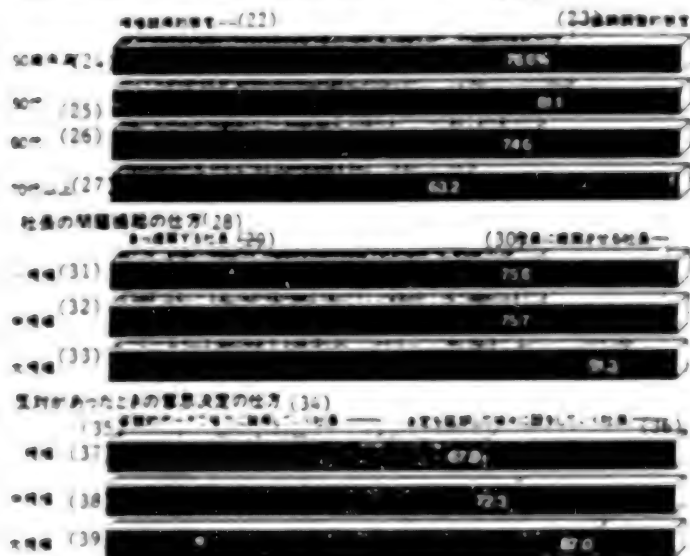


Key:

1. Problems surrounding outdatedness of technical skills of technical personnel.
2. Can not be considered important problems
3. Are considered major problems
4. Technical skills of the majority of technical staff become outdated after reaching middle age.
5. There are few areas where practical use can be made of technical staff
6. Outdated technical staff are in high positions.
7. Even though their technical skills are outdated, they themselves do do recognize it.
8. Comparison of organizational transitions in Japan and the United States
9. from "Soshiki Kagaku" [Organizational Science]
10. Japan
11. United States
12. Solicitous activities
13. Task actions
14. Information activities
15. Activities instilling values
16. Solutions by means of authority
17. Groundwork laying solutions
18. Compromise solutions
19. Problem solving by direct confrontation
20. Control by means of a combination of values and information
21. Self-regulating control
22. Output control
23. Collective decision making
24. Communication informality
25. Identification
26. Change-oriented organizational climate
27. Formalization of personnel affairs
28. Promotion of management



社員の年齢と職種別・経験別・経験別・経験別・経験別 (21)



経営者の選任・選任後の性格 (40)



Key:

1. Level of present activity and effort
2. Multi-specialty
3. Non-specialized generalist
4. Uni-specialty
5. Level of effort
6. Planning
7. Office
8. Sales
9. Development and design
10. Production
11. Future forecast of activities using knowledge and experience
12. Multi-specialty
13. Uni-specialty
14. Non-specialized generalist
15. Planning
16. Office
17. Sales
18. Development and design
19. Production
20. Brightness of forecast
21. Age and attitudes of direct persuasion/cooperative coordination of company presidents (environment---individual characteristics)
22. Attitude of direct persuasion
23. Attitude of cooperative coordination
24. Less than 50 years of age
25. 50's
26. 60's
27. 70's and above
28. President's methods of posing problems
29. Presidents who make proposals themselves
30. Presidents who let employees make the proposals
31. Small businesses
32. Medium sized businesses
33. Large businesses
34. Method of problem solving when there is opposition
35. Presidents who persuade with objective data
36. Presidents who postpone the decision and discuss over time
37. Small businesses
38. Medium sized businesses
39. Large businesses
40. Personality of advisers chosen by chief executives
41. Extrovert
42. Introvert
43. Perception
44. Judgment
45. Emotion
46. Ideas
47. Intuition
48. Sensation

図1 日本とアメリカの労働生産性の増進の経路の比較 (1)

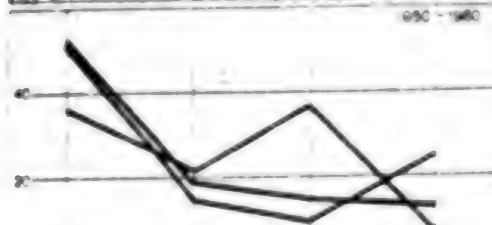
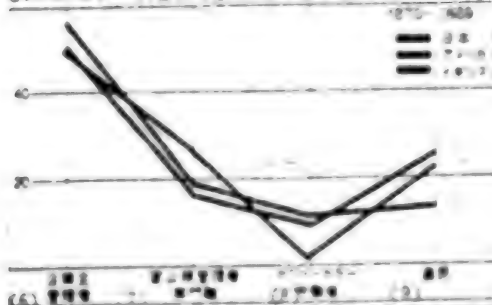


図2 日本の労働生産性の増進の経路の比較 (2)

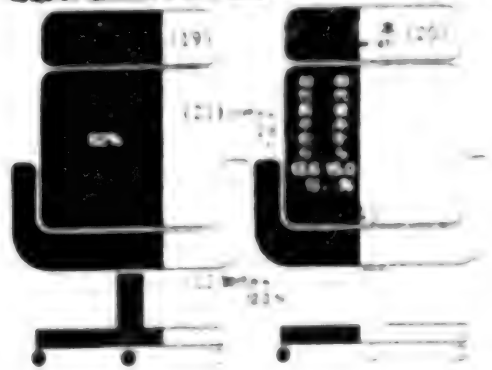
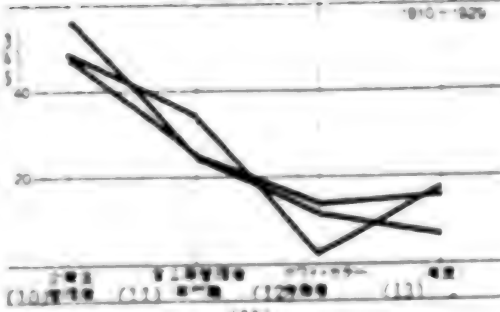


図3 日本の労働生産性の増進の経路の比較 (3)



日本の労働生産性の増進の経路の比較 (25)

年次	増進率 (%)	国名	増進率 (%)
1970	40.0	日本	40.0
1971	37.9	日本	37.9
1972	36.7	日本	36.7
1973	35.9	日本	35.9
1974	35.0	日本	35.0
1975	34.6	日本	34.6
1976	34.6	日本	34.6
1977	34.6	日本	34.6
1978	34.6	日本	34.6
1979	34.6	日本	34.6
1980	34.6	日本	34.6
1981	34.6	日本	34.6
1982	34.6	日本	34.6
1983	34.6	日本	34.6
1984	34.6	日本	34.6
1985	34.6	日本	34.6
1986	34.6	日本	34.6
1987	34.6	日本	34.6
1988	34.6	日本	34.6
1989	34.6	日本	34.6
1990	34.6	日本	34.6

Key:

1. International comparison of changes in the class from which the business elite comes
2. "Bizinesu Erito" [Business Elite] by Hirotaka Takanari, Chuo Koronsha 1966
3. Japan
4. United States
5. England
6. Executives
Managers
7. Government and public officials
Professional jobs
8. White collar
Laborers
9. Farmers
10. Executives
Managers
11. Government and public officials
Professional jobs
12. White collar
Laborers
13. Farmers
14. Executives
Managers
15. Government and public officials
Professional jobs
16. White collar
Laborers
17. Farmers
18. Status of implementation of planned development of top management
AMA Research Report (American Management Association 1979) Skill Development Report No. 84 (Human Skills Development Center 1982)
19. United States (N=179)
20. Japan (N=147)
21. From their 20's
22. 30's
23. early 40's
24. late 40's
25. Japanese businessmen's career
26. Top management
27. Item
28. General employees
29. Rank
30. Rank
31. Honesty
32. Effort
33. Harmony
34. Conviction
35. Courage
36. Fidelity
37. Fortitude
38. Disposition

39. Gratitude
40. Affection
41. Normalcy
42. Action before words
43. Good intentions
44. Self-denial
45. Justice
46. Integrity
47. Friendship
48. Vitality
49. Frankness
50. Sincerity
51. Temperament
52. Gentleness
53. "Gekkan Rikuruto" [Monthly Recruit] June 1980

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ECONOMIC

DAIICHI KANGYO BANK FIASCO IN EXCHANGE SPECULATION DESCRIBED

Tokyo KINYU TO GINKO in Japanese 21 Oct 82 pp 26-29

[Article: "Pitfalls of Japan's 'Internationalization'--Shock of Speculation Failure"]

[Text] Indulgent Management System Permits 9.7 Billion Yen Debt

The foreign exchange rate, which was in the range of 240 yen to the dollar at the beginning of 1978, managed generally to maintain a high yen trend throughout the year. The amount of dollars purchased through intervention in the Tokyo market totalled 5.4 billion yen, exceeding the amount purchased during the "Nixon shock." However, the rate of exchange fell below 220 yen on 3 April, under 210 yen on 21 June and finally under 200 yen on 29 July.

It was during the yen's ascent in August that Haruo Kanda, the funds section chief of the Daiichi Kangyo Bank (DKB), was assigned to its Singapore branch. At that time, the branch served as a key foreign exchange base for the DKB, and the previous funds section chief had just returned to Japan after an impressive record of achievements. Therefore, Kanda was presumably full of determination to match his record.

Despite the Japanese Government's measure to deal with the high yen, the yen rate in the Tokyo market reached a new high of 176 yen on 31 October. However, the following day, on 1 November, U.S. President Carter announced a strong policy to defend the dollar, and a joint agreement on intervention was concluded between the United States, West Germany and Switzerland. On 2 November, the Bank of Japan intervened in the morning and afternoon market sessions for a total of \$900 million, cooperating in the defense of the dollar.

The policy actions taken by the various countries had an immediate impact on the exchange market. On 1 December, the exchange rate was 200 yen, but subsequently the yen moved consistently lower in value versus the dollar, dropping to the 250-yen level from 1979 to the spring of 1980.

At the time President Carter implemented his dollar defense policy, Kanda gambled that "the yen value would continue to rise." The

of the exchange dealers usually depends on daily purchases and sales, and their gains or losses are determined by the difference in the "buy and sell" transactions. Since the difference must not be excessive, a ceiling is placed on their holdings (a 300-million-yen limit in the case of the DKB). Any sum within that limit is treated as a business profit or loss.

The dealers who frantically watch the market quotations usually accept each day's gains or losses as a fait accompli, and start the next day's dealings in a new fighting mood. They do not violate the limit on holdings by hanging on to "losers" and wait for their fortunes to change. The reason is that, if they carry their losses over to the following day, "they will be unable to accurately judge the market changes which occur from one minute to the next. In the stock market, there is an ironclad rule that one must bet against the curve trend, and the same rule could be applied for the foreign exchange market.

However, chief Kanda violated this rule and held on to a considerable sum of dollars. As a result, he took losses amounting to about 500 million yen at the outset. If he had reported this to his superiors at this point, it "would have been treated as a loss" (a DKB official), but he could not bring himself to do this.

Thus, during the approximately 4 years until his return to Japan in early June 1982, he continued futile efforts to make up the losses, and this resulted in the accumulation of total losses in the enormous amount of 9.765 billion yen.

Simplistic and Bold Methods

The modus operandi of chief Kanda has not been explained. However, the principal reason which enabled him to speculate and which prevented his "fiasco from being exposed" was unmistakably the management system used by the Singapore branch and the DKB headquarters.

Although there is a difference between stock transactions and futures transactions, a separate sheet is prepared for each transaction noting the kind of sale or purchase, contract date, amount of trade, exchange rate, bank account, settlement date and yen equivalent. The total is tabulated and documents are prepared indicating the amount of purchase or sale and the difference between the purchases and sales for each day. The outstanding exchange assets are checked by such means.

Basically, the responsibilities of the officer in charge of transactions and the control officer registering the accounts are separate. However, at the DKB Singapore branch, which had only five employees at the time, both functions were handled by Kanda, enabling him to "doctor" the documents. Herein existed the most serious pitfall.

In March of last year, another case occurred at the Hong Kong subsidiary of the Nissho Iwai Corp which resulted in 16 billion yen in losses through foreign exchange dealings. In this case, 120 turnovers in purchases and

and sales were reportedly made. It is surprising that such a large number of deals went undetected by a professional bank. Regarding futures also, a large amount of money changes hands during settlement. If the money flow is supervised, any "irregularities" should be discovered.

The method used was apparently as follows. First, at the time of settlement for transactions made during the quarter, the "spectacular deals" were included under the regular transactions of the Singapore branch, which has total assets of 1.5 trillion yen. Furthermore, at the end of the quarter, false exchange rates were registered for both purchases and sales in order to balance the books. In other words, the manager was manipulating the "inventory, purchase prices and sale prices." He camouflaged the resultant deficit by diluting the accounts held by other overseas branches of the bank (by about \$39 million).

Not a few exchange dealers at other banks expressed sympathy with section chief Kanda who was struggling to make up the deficit, but they added the critical comment: "Unless initial controls are strictly maintained, many loopholes can be found in foreign exchange dealings. Unlike the professional dealers in other countries, the dealers at Japanese banks are salaried employees, and they do not play with the exchange market for personal profit. The one and only serious problem is the inadequacy of management controls."

Singapore--City of Appeal and Magic

The \$39-million-yen deficit at the outset could have been erased by a single successful deal. Also, the Singapore market has the appeal and magic to make a person believe that his own reputation will be enhanced if he is instrumental in recording profits. Furthermore, Kanda had gained a reputation as a "shrewd operator," and was introduced on a special NHK-TV program entitled "Money," in addition to being interviewed by financial magazines. He therefore undoubtedly believed he had a chance to redeem himself.

The Singapore Offshore Center was established in November 1968. It set up the Asian Currency Unit (ACU) separately from domestic accounts, and gave favorable treatment such as lower interest taxes to ACU savings accounts. Later, in 1974, attractive steps were actively promoted to build up the market, including the removal of interest controls, the abolition of foreign exchange rate controls, and broader tax rates favoring ACU transactions.

As a result, Singapore replaced Hong Kong as the principal market in Asia, reaching the level of 117.4 billion in 1976. It has subsequently continued its growth, increasing by nearly five times during the past 5 years. It recorded \$54.4 billion at the end of 1980, \$85.9 billion at the end of 1981, and \$95.7 billion at the end of March 1982--double the \$48.8 billion recorded by Hong Kong. (The world record is \$615.4 billion set by London.)

It should be noted that the exchange market is basically an inter-bank market, and its chief characteristic is the fact that 70 to 80 percent of its monetary operations and procurement are inter-bank transactions. It

is therefore a field where the local managers sense a challenge to prove their prowess.

Singapore is a market with such an attraction. Today, there are 157 banks doing business there, including 13 local banks. There are 15 Japanese banks with established branches, and 5 more branch banks are scheduled to open according to unofficial plans for FY-82 and FY-83. The Japanese share of ACU assets is estimated at about 30 percent, and Singapore has become an important market for Japan.

The DKB opened its first resident office in Singapore in December 1971, later promoting it to branch status in July 1976. It issued the first FRCD's (Floating Rate Certificate of Deposit) in the Asian dollar market in 1977 and was highly rated in Singapore for its contribution to the growth of the local market, equally with the Sumitomo Bank which conducted the first public subscription of the FRCD's. Within a relatively short time, the assets of the DKB Singapore branch reached 1.5 trillion yen, to occupy the top-ranking position among Japanese banks.

The DKB's foreign currency assets at the end of the March quarter in 1982 exceeded 3 trillion yen. The Singapore branch proved itself a vital base with slightly under 20 percent of all such assets. It was therefore conceivably a normal thing to make an impressive record, "unforgivable if one failed."

Nonetheless, from the standpoint of the wily foreign professional dealers, the novice salaried dealer was undoubtedly a "sitting duck."

Table 1.

1) (1) 急テンポだった一助の国際部門

2)	外貨総資産 (100万円)	外貨資産 (100万円)	総資産 (100万円)	外貨資産 総資産 A/B (%)	5) 外貨総額 (100万円)	国際部 門収益7) (100万円)
48.3	9,357	2,378	78,058	8.1	265.83	13,273
49.3	13,255	3,772	92,503	11.3	276.00	15,322
50.3	18,756	4,219	105,047	11.8	293.85	18,599
51.3	17,643	4,261	116,580	11.0	299.70	25,363
52.3	20,257	4,594	127,824	10.0	277.30	28,946
53.3	22,826	5,263	135,797	8.7	223.40	27,771
54.3	22,511	8,358	149,500	11.7	209.30	27,089
55.3	40,806	14,685	183,563	20.0	249.70	30,372
56.3	63,862	22,839	206,069	24.1	211.40	30,582
57.3	83,778	32,319	242,906	33.0	248.30	37,893

8) 注: 外貨総額は母行として東京市場の期末総額

(See Key on next page)

Key:

1. Record of DKB International Sector
2. Foreign exchange volume (unit: \$1 million)
3. Foreign currency assets A (unit: \$1 million)
4. Gross assets B (unit: 100 million yen)
5. Foreign currency assets ratio A/B (%)
6. Foreign exchange quotations (yen rate per dollar)
7. International sector profits (unit: 1 million yen)
8. Note: Foreign exchange prices are generally end-of-quarter quotations in the Tokyo market.
9. 58.3 March 1973
49.3 March 1974
50.3 March 1975
51.3 March 1976
52.3 March 1977
53.3 March 1978
54.3 March 1979
55.3 March 1980
56.3 March 1981
57.3 March 1982

Desperately Ambitious to be No 1 Qualitatively and Quantitatively

Regarding the inadequacy of the management controls which resulted in the mishandling of funds and the delay in its discovery, the DKB expressed regret and said: "We have no excuse" (DKB Vice President Tatsuo Aoki). At the present time, the only good thing is that the case was not a "crime" perpetrated systematically by a more than one employee. However, it is undeniable that numerous underlying problems were responsible for making simple but daring "acts of crime" possible.

The first problem which could be pointed out is the outdated international sector of the DKB. A well-known OB (old boy) of the Finance Ministry who is well-versed in international finance remarked: "Frankly, there is a great difference between the internationalization of Japanese banks and the merchant banks of Europe and America. The Sumitomo, Mitsubishi and perhaps Fuji banks are barely passable. The Mitsui Bank, which has a long history in foreign exchange business, has accumulated knowhow. These banks are therefore accepted worldwide. Of course, the Tokyo Bank, which specializes in foreign exchange, is different."

The "Shadow" Part of the Prosperous International Sector

As shown in Table 1, the international sector of the DKB is enjoying a spurt of growth. The foreign exchange volume handled by the bank has increased ninefold from approximately \$9.4 billion in FY-72 to \$83.8 billion in FY-81. Foreign currency assets have risen about 14 times, from less than \$2.4 billion to \$32.3 billion. It is equivalent to a 33-percent share of the gross assets of 24 trillion yen at the end of FY-81.

The amount of increase in gross assets during this period was 16.5 trillion yen, of which the rise in foreign currency assets constituted 44 percent, or 7.4 trillion yen. Moreover, its contribution on the profit side cannot be ignored. The profits in the international sector rose 2.9 times, from 13.3 billion yen in FY-72 to 37.9 billion yen in FY-81. Of the gross business profits of 321.9 billion yen in FY-81, the international sector is calculated to have contributed 12 percent. Since it was a difficult period when the margin of profits diminished and plant investments and other capital demands stagnated, a great deal was expected of activities in the international sector.

However, compared to the major metropolitan banks in Tokyo, the DKB's activities fell far short. Among the 12 banks with the exception of the Bank of Tokyo, the DKB ranks second after the Sumitomo Bank in the handling of foreign exchange volume, but third in international sector profits, with a difference of about 5 billion yen between it and the second-place Fuji Bank. The ratio of profits to foreign exchange volume for the DKB is the lowest among the top and middle-level metropolitan banks. In other words, its business scale is considerable, but the end profits fall short.

The opinion among many international sector managers of the other banks is: "The DKB has certainly used its merit as a top Japanese bank to the hilt; it has issued not only yen-based foreign bonds and the first noncollateral corporate bonds (Sears Roebuck and Co), but also the first SDR-based FRCD's and the first SDR cooperative financing in the world. However, its handling of foreign overseas securities is still lagging. We are more advanced than the DKB in the procurement and management of funds."

Although its scale is top-class, domestically the DKB is often described by the major banks as in the "first-and-a-half class." And this description might be apt for its international sector as well. There is speculation that the recent affair could have been fostered by a mood of resistance to this. One exchange official posed the question: "When one bank exceeds its limit on holdings, another branch of the same bank sometimes takes over the excess amount temporarily. Because of such precedents, I doubt that the other DKB branches have been completely free of indirect involvement." Such speculation probably stems from knowledge of the DKB's overzealous practices.

(See table on next page)

Table 2.

1) (2) 収益への寄与大きい都銀の56年度国際部門

	2) 営業粗利益	3) うち 国内部門	4) 国際部門	5) 国際部 門シェア	7) 単位: 億円
8) 第一勧業	3,219 (2,982)	2,840 (2,676)	379 (306)	11.8 (10.3)	83.778 (63.862)
9) 富士	2,811 (2,669)	2,382 (2,347)	429 (321)	15.3 (12.1)	81.419 (66.029)
10) 住友	2,767 (2,332)	2,273 (2,166)	494 (366)	17.9 (14.5)	106.297 (71.772)
11) 三井	2,617 (2,357)	2,267 (2,124)	350 (233)	13.4 (9.9)	55.865 (31.006)
12) 和歌山	2,451 (2,247)	2,069 (1,360)	382 (267)	15.6 (12.6)	75.156 (51.744)
13) 大阪	1,738 (1,610)	1,462 (1,365)	276 (245)	15.9 (15.2)	59.899 (45.724)
14) 東京	1,915 (1,809)	1,664 (1,586)	251 (224)	13.2 (12.4)	49.639 (33.637)
15) 大田	1,861 (1,756)	1,667 (1,595)	194 (157)	10.5 (9.6)	35.056 (26.561)
16) 和歌山	1,136 (1,067)	1,029 (968)	107 (79)	9.5 (7.5)	18.432 (16.119)
17) 大田	1,373 (1,151)	1,255 (1,047)	118 (104)	10.9 (10.4)	29.161 (19.541)
18) 和歌山	1,057 (992)	982 (927)	75 (65)	7.7 (6.2)	17.026 (10.584)
19) 和歌山	850 (792)	776 (723)	74 (69)	8.7 (8.7)	13.293 (12.143)
20) 東京	1,490 (1,417)	444 (525)	1,046 (893)	70.1 (63.1)	182.675 (172.034)
21) 合計	25,285 (23,383)	21,110 (20,034)	4,175 (3,349)	16.5 (14.3)	807.876 (630.756)
22)					

(注) 1) 各都銀の56年度決算。2) 大田の国際部門シェア算出にあたっては信託業務を除く。3) 営業粗利益は当都銀計で、各行営業シェアの基準と若干の差あり。

Key:

1. Record of Metropolitan Bank International Sector with Major Profits in FY-81.
2. Gross business profits
3. Domestic sector
4. International sector
5. Shares of international sector
6. Foreign currency exchange volume (unit: \$1 million)
7. (Units: 100 million yen, ¥)
8. Daiichi Kangyo Bank
9. Fuji Bank
10. Simitomo Bank
11. Mitsubishi Bank
12. Sanwa Bank
13. Mitsui Bank
14. Takai Bank
15. Taiyo Kobe Bank
16. Kyowa Bank
17. Daiwa Bank
18. Saitama Bank
19. Takushoku Bank (Takugin)
20. Bank of Tokyo

21. Total

22. Notes-1. Figures in brackets show numerical values for the previous year.

2. In calculating Daiwa's international sector shares, its trust remunerations are excluded.
3. Gross business profits shown are estimates by this journal, and there is a slight difference from the announced shares of the various banks.

Strict and Independent System Is Key

The DKB intends to clarify the responsibility in this case by dismissing chief Kanda, meting out appropriate punishment to the successive managers of the Singapore branch and other officials in charge, and by turning down FY-82 bonuses for all those officials. Furthermore, it plans to institute a system which will include the establishment of an overseas inspection office under its inspection division. It will carry out inspections of its overseas branches and increase key personnel in these branches. In addition, the position of manager of the Singapore branch, which has been occupied successively by employees of the old Daiichi Bank, is being filled by members of the old Kangyo Bank in the overall exchange of personnel as an inevitable outcome of the merger of the two banks. The replacement of the old chain of branch managers was implemented in part by a mutual exchange in London and New York, but this would be a good opportunity to accelerate the exchange in view of the recent fiasco.

Furthermore, from the standpoint of the DKB, it is of course urgently necessary to perfect its internal management system, including the international sector. It is undoubtedly important not to let the case end as a mere "misdemeanor" by a single individual, but to drastically reappraise the conditions which nurtured the fiasco. The "foreign exchange speculation fiasco" by representative Japanese bank, ranked among the top 10 in the world, could directly have an impact on confidence in Japanese banks as a whole in the world of international finance. The point is to decisively take forward-looking measures to secure understanding abroad, aside from the decision to "calculate special profits from stock sales, make an overall settlement in the September interim period, and avoid any effect on the 6-yen annual dividend." The important thing is to adopt strict voluntary measures. It is hoped that the incident can be settled other than through the tough measures by Finance Ministry and other government officials which have prevailed in such matters in the past.

5884

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ECONOMIC

REORGANIZATION OF PETROLEUM INDUSTRY ENTERED ON FINAL PHASE OF 'NO WAIT'

Tokyo SHUKAN DAIYAMONDO in Japanese 30 Oct 82 pp 76-79

[Text/ Chairman of Petroleum Association of Japan Advocates Consolidation

A reorganization of the petroleum industry is like something happening while dreaming in a dream, appearing and disappearing repeatedly. It is a dream which will never come true. That has been the accepted view on a reorganization of the petroleum industry. However, at this juncture, the situation has completely changed, and, as if suddenly given "checkmate," a reorganization has entered on the serious phase of whether or not the dream will come true.

It is not that there have not been any serious advocates for a reorganization of the petroleum industry. Rather, there were more people inside the industry than outside who advocated its necessity. But discussions had inevitably ended with: "Agreed on the overall idea, but against specifics." And now, the attitude seems to be lately changing considerably. Reorganization discussions which go into specifics come forth between the Ministry of International Trade and Industry (MITI) and the Resources and Energy Agency (REA), both of which are in the position to lead the industry.

The first person from the industry who took the lead is Tokin Nagayama (President, Showa Oil Corp.), who is the chairman of the Petroleum Association of Japan (PAJ).

On 14 October, at a news conference after a regular meeting of the board of directors of PAJ held at Keidanren Kaikan in Otemachi, Tokyo, Chairman Nagayama stated his view as follows: "When we deliberate even one single matter such as a plan as to how to deal with the excess capacity of the refinery facilities (which is 1 million barrels, an equivalent of 17 percent of 5.84 million barrels per day), we come to know that we cannot expect to get a basic solution for a structural improvement of the petroleum industry. For a structural improvement of the petroleum industry, it is necessary to consolidate the industry...."

Though the word used is consolidation, it is obvious that he meant to say the need for a reorganization. Chairman Nagayama also added as follows: "Concerning the method of consolidation, it is either that a readjustment will take place on the basis of the free economy theory, or that it will be done by some degree of induction by people. In either case, it is time for action."

the government and the Subcommittee of the Oil Department of the Petroleum Council to make a choice." This statement of his can be taken as a clear indication that leaders of the industry themselves recognized that they face the stage to examine realistic ways for the petroleum industry reorganization.

The trend for a reorganization is heightened more than ever.

Time Is Ripe for Reorganization

In fact, it is not only Chairman Nagatama who voiced those sentiments. Yasuoki Takeuchi, president of Nippon Oil Corp. which is the largest corporation in the industry, once uttered the wise remark, emphasizing the need of a reorganization: "A ripe persimmon will fall to one's hand without anyone's doing." Thereafter, dumbfounded by the severity of the reaction from the industry, he became very cautious in his utterances, but he let it be known from time to time that his "ripe persimmon theory" is expanding in the depth of his heart.

Idemitsu Kosan Corp., the leader of the national corporations group, showing a positive attitude toward a reorganization, says: "There are too many oil companies. The half will go." (President Shosuke Idemitsu) President Hiroshi Onori of Kyodo Oil Corp., which is known as "Government-owned Company," says, "Frankly speaking, the matter of a reorganization may not be easy. But we can not leave the situation as it is. The industry itself must deliberate the reorganization more seriously than ever from the point of medium and long term perspectives." Here he is warning against reorganization discussions which tend to end up at a standstill blocked by short sightedness.

MITI expresses similar views. "From the petroleum industry we hear opinions about the government energy policies, one of which is to abolish the Petroleum Law. This law should not be abolished right now. But we think it is necessary to flexibly carry the law and in fact we are doing so."

"But the industry itself must promote a consolidation of the industry by adjusting to the changing situation of the supply and demand structure, etc. Otherwise it will not survive. It is not time any longer for 'agreed on the overall idea, but against specifics.' I wonder if it should not be necessary to seriously examine and change the way of thinking." Words by Kunio Komatsu, the former director of IEA, who has been promoted to a MITI inquiry commissioner since 15 September, represent the views of MITI.

The time is ripe for reorganization. If not, at least there is a swelling mood for it. That is for sure. But one industry leader says with a constrained smile: "Then, when we come to consider who and who shall be united in marriage, even at the preliminary stage before the formal introduction of the parties, physiological incompatibility becomes apparent and we cannot have it realized."

We also hear about a true underlying feeling: "If merged, one presidential chair would totally disappear. It is natural that one would like to maintain the status quo as long as he can reign over a kingdom."

It is by no means something we cannot understand. Since the peak of a president is reached only after hard climbing of stairs in a walled-in position, we can fully understand the sentiment. On the other hand, however, it is also the fact that the surrounding conditions would not allow such sentiment. The demand for oil has been steadily declining because of the iron, steel, cement, electric power industries' efforts to be free from oil dependency.

On 14 September, MITI again revised downwards the oil supply plan for the latter half of Fiscal 82 after it had previously done so for the first half of the fiscal year. This indicates three consecutive years of decline. The top of this, due to the prolonged period of low yen exchange rate, the current deficit of the petroleum industry as a whole was 340 billion at the time of FY 81 settlement. This deficit is expected to keep increasing like a snowball. The industry will not survive under the old way of "Agreed on the overall idea, but against specifics." It is a cliffhanging situation.

Countermeasures for Excess Facilities Began

Inevitably, from the outside of the petroleum industry we hear such an opinion expressed by Keizaburo Yamada, vice-chairman of Mitsubishi Corp. as follows: "The most important thing at this time for oil men to do is to put in the idea of what the petroleum industry should be."

"Especially young people must draw the future plan of the petroleum industry with their flexible ways of thinking." This could be taken to mean a serious criticism that it would be no good to leave the matter to the aged group of present company presidents and financial chieftains who would themselves become merger inciters.

Nevertheless, in reality it would certainly take some time for the younger people to draw the future plan and try to materialize it. That is true. Therefore, though not exactly because of that observation, the Subcommittee of the Oil Department of the Petroleum Council (Chairman: Shuzo Inaba) has begun to act as an "inciter" for a reorganization and consolidation. Their main job has begun to hold "top hearings" from presidents of each of the companies concerning countermeasures against excess facilities. One might say this was the first tangible step toward a consolidation and reorganization.

At the same time, the Petroleum Council, through "Working Group for Basic Policy on Adjustment Policy" (Chairman: Norio Ikuta, director of Science Laboratory, Central Research Institute) which was organized on 24 September by the Council's subcommittee, has set out to examine, among other things, the following matters:

(1) The present situation and problem areas of the facilities structure of the petroleum industry, (2) The medium and long term demand forecast for petroleum products, what the profit rate structure should be for petroleum products, and its influence over enterprise earnings, and the secondary facilities including supply structure and the facilities structure of the oil refinery plants should aim at; (3) How the oil refineries and

introduction of secondary facilities by types should be, where to place common heavy oil process centers, what the policy support should be for the facilities advancement.

Needless to say, the Petroleum Council is an advisory body to the Director of REA. Therefore, what the Council intends to do is what REA-MITI intends to do. In fact, REA, affirming a series of those movements, set out the policy that in the near future, "we want to promote the rationalization and efficiencies of the production and circulation system through the consolidation of production by the utilization of consignment orders and through the common use of oil tank areas." (REA: Petroleum Planning Section)

Blueprint Drawn by MITI

In that sense, the real inciter for a reorganization of the petroleum industry can be said to be MITI itself. In fact, MITI has been secretly drawing even a blueprint for a reorganization. MITI is planning the construction of common process centers for heavy crude oil, projected to be operative in FY 51, that is 3 years from now. In point of fact, in this construction plan is "the scheme" for a reorganization incorporated rather casually. The reason why we say this is that MITI recently decided to make a feasibility study for the construction of the process centers at three locations in the country, and that in the selection of enterprise groups to carry out the study, "the scheme" was made well reflected.

To put it concretely, grouping has been materialized as follows: In Sakai-Kenboku region, Maruzen Oil and Koa Oil as the axis with Ube Enam, Mitsui Toatsu Chemicals, and Osaka Gas; in Sakai region, five companies--Daikoku Oil, Asia Oil, Asia Kyodo Oil, Kyodo Oil, and Taiyo Oil--as the axis with Mitsubishi Chemical Industries, Tokuyama Soda, Shikoku Electric Power Co.; in Niigata region, Showa Oil, Showa Yokkaichi Oil, Toa Oil, Seibu Oil, Taiyo Oil, and Tohoku Electric Power Co.

In some the combination went across the capital and group relationships. Furthermore, MITI expressed that among five regions of Tohoku, Tokai, Chubu, Setonaikai, and Kanto, "three or more locations would be selected and added to the feasibility study. And in each location the stimulation for a reorganization will be given according to the similar idea." (REA: Oil Refinery Section) That is not all. Going along with the above line, MITI is considering "to put Maruzen Oil under the Nippon Oil group through Koa Oil which belongs to the K. O. Oil group." MITI is also holding an idea that "since Niigata Refinery of Nippon Oil is located next to the refineries belonging to the Showa Oil group, we want to unit Nippon Oil and Showa Oil." (REA: Oil Refinery Section) What this means is that a reorganization which puts across the existing capital and group boundaries is to be carried out by the government leadership.

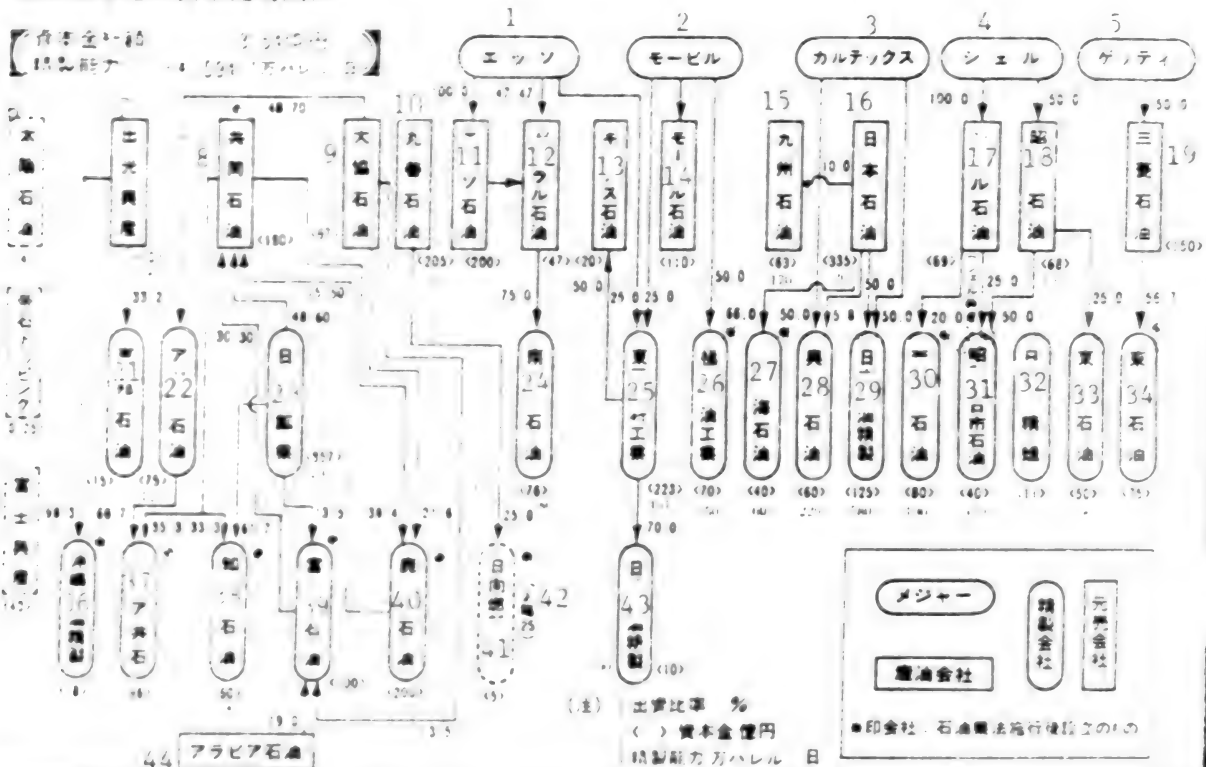
The private sector quickly caught this movement. As if to claim that if it is going to be done at all, it will be carried out voluntarily by the private sector initiative rather than by the government leadership, discussions were

Individual corporations are steadily taking place. Showa Oil and Shell Oil have established "the Committee for Cooperative Work," and realized the consolidation of cooperation in such areas as the consolidation and use of the oil tank facilities and making a joint investment for building a new oil process facility of Showa Yokkaichi Oil.

Now, Nippon Oil and Daikyo Oil Corporations agreed upon expanding their common use of the oil tank facilities. Thus, the circle of cooperative activities and that of affiliation are moving steadily toward expansion. "Counting as the prelude to the marriage of merging" (words by a petroleum leader) has, one could say, begun.

In any case, MITI has finally decided to undertake seriously the matter of the reorganization, as the MITI authorities pointed out: "Recently, leaders of the petrochemistry industry, which will not be able to survive due to the structural recession unless a reorganization is carried out, went en masse to London to examine the severe reality of survival of their European counterparts. It would be a good idea if the petroleum industry too should take the same available opportunity to observe at first hand how the Western petroleum industry is wrestling with the situation for their survival." The industry can not survive under the present condition. The petroleum industry, in other words, given "checkmate." But this time it does not seem to be allowed to take an advantage of calling "Not ready."

■石油会社の資本提携関係



Capital Affiliation Relations of Oil Corporations

The grand total of the capital.....335.4 billion yen
The total refinery capacity per day....5,941 million barrels
(as of March 1980)

Note: Investment rate %

Capital, 100 million yen

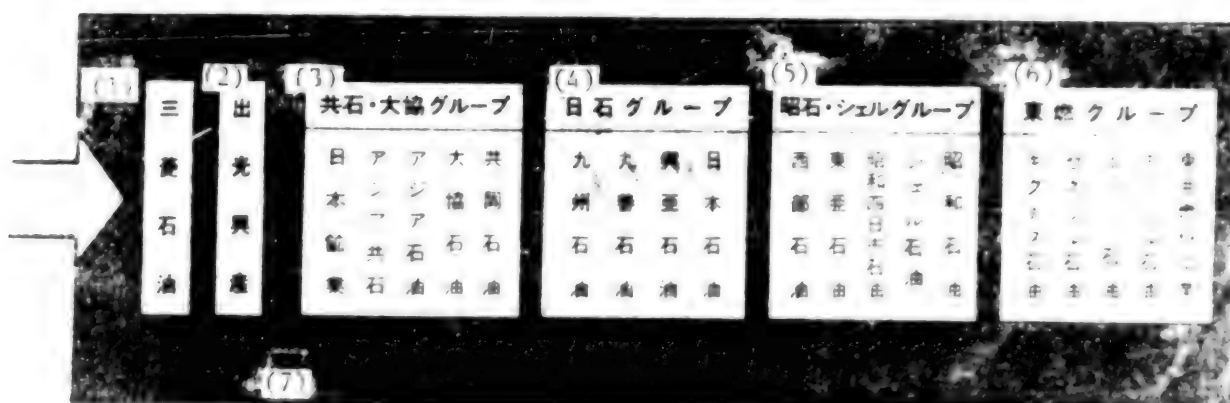
Refinery capacity, 10 thousand barrels per day

- : Major oil corporations
- : Oil producing corporations
- : Refinery corporations
- : Dealers

Corporations with * are those established after the Petroleum Law has become effective.

Key:

- | | |
|-------------------------|----------------------------|
| 1. Esso | 23. Nippon Mining |
| 2. Mobil | 24. Nansei Oil |
| 3. Caltex | 25. Toa Nenryo Kogyo |
| 4. Shell | 26. Kyokuto Oil Kogyo |
| 5. Getty | 27. Nihonkai Oil |
| 6. Taiyo Oil | 28. Koa Oil |
| 7. Idemitsu Kosan | 29. Nippon Oil Refinery |
| 8. Kyodo Oil | 30. Seibu Oil |
| 9. Daikyo Oil | 31. Showa Yokkaichi Sekiyu |
| 10. Maruzen Oil | 32. Nippon Seiro |
| 11. Esso Oil | 33. Toa Oil |
| 12. General Sekiyu | 34. Tohoku Oil |
| 13. Kigunasu Oil | 35. Fuji Kosan |
| 14. Mobil Oil | 36. Okinawa Oil Refinery |
| 15. Kyushu Oil | 37. Asian Kyodo Oil |
| 16. Nippon Oil | 38. Chita Oil |
| 17. Shell Oil | 39. Fuji Oil |
| 18. Showa Oil | 40. Kashima Oil |
| 19. Mitsubishi Oil | 41. Hyuga Nenryo Kogyo |
| 20. Teikoku Oil Topping | 42. Taiyo Oil |
| 21. Toho Oil | 43. Nichimo Oil Refinery |
| 22. Asian Oil | 44. Arabian Oil |



"Blueprint" for the reorganization

Key:

1. Mitsubishi Oil
2. Idemitsu Kosan
3. Kyodo-Daikyo Group
 - Nippon Mining Asian Kyodo Oil Asian Oil Daikyo Oil Esso Oil
4. Nippon Oil Group
 - Kyushu Oil Maruzen Oil Koa Oil Nippon Oil
5. Showa Oil-Shell Oil Group
 - Seibu Oil Toa Oil Showa Yokkaichi Oil Shell Oil Sansei Oil
6. Toa Nenryo Kogyo Group
 - Kigunasu Oil General Sekiyu Esso Oil Mobil Oil Toa Nenryo Kogyo
7. To be eventually merged in the Showa Oil-Shell Oil Group

12281

CSO 1101/052

STATUS OF TRISTAN PROJECT REPORTED

TOKYO KAGAKU SHIMBUN in Japanese 29 Oct 82 p 9

[Text] Since 1981, the High Energy Physics Research Institute has proceeded with the first 5-year plan of the Second Accelerator Project "TRISTAN" (traversable ring intersecting storage accelerators in nippon), which is expected to unlock the secret of basic substances in elementary particles such as Topquark [phonetic] and Gluon [phonetic]. In the first 5-year plan, the world's most advanced research on experimental elementary particle physics will be undertaken by domestic and foreign researchers--for instance, joint research by Japanese researchers, by Japan and the United States based upon the Japan-U.S. high energy physics research cooperation pact, and by Japanese and other foreign researchers, to create 60 GeV energy from the collision of 30 GeV (30 billion electron volts) electrons and positrons in the main ring. Then, in the second multi-year plan, the project is expected to advance to an ultra super high energy physics experiment and research wherein positrons from the existing 12 GeV positron synchrotron accelerated to 40-60 GeV will be collided with further accelerated electrons and positrons in the main TRISTAN ring. At present, the accelerator building project and the test project are being formulated for the first 5-year plan of the TRISTAN Project. We have asked Ken Kikuchi, chief of joint research of the high Energy Physics Research Institute, about the present status of construction and the main construction schedules projected up to FY-85.

The "TRISTAN Project" is based upon an idea conceived in 1973 by Tetsuji Nishikawa, director of the High Energy Physics Research Institute.

Effective energy of 60 GeV is to be attained by using the TRISTAN facility, which is scheduled to be completed under the first 5-year plan of the TRISTAN Project, which is now in its second year. This energy level is slightly lower than that which can be produced by foreign collision type accelerators currently being planned and talked about. However, at the time when this facility is scheduled to be roughly completed, in 1985, and immediately

Instead, when it will be fully completed, it will be acknowledged as an accelerator with the world's highest energy and beam intensity. It will lead to the discovery of new particles and various new phenomena, hopefully leading to research and experimental achievements that will be worthy of winning a Nobel prize.

Positrons accelerated to 30 GeV have a speed of 99.9984 percent of the speed of light, and its mass becomes about 60,000 times greater than positrons at rest.

In order to capture with a resting target an energy equivalent to the effective energy obtainable by the collision of 30 GeV electrons and 30 GeV positrons, the energy of the positrons which collide with the resting target must be about 2 million GeV (about 2 quadrillion electron volts). Positrons with that kind of energy cannot be artificially created.

The most promising and important study of TRISTAN is to identify the sixth quark (quark is called Flavor [phonetic] which has a quantum number, and when it is identified, to carry out experimental investigation and clarification of its properties.

The heavy, long particle with a comparatively long life " J/ψ " (phonetic), discovered in 1974 concurrently by the Brookhaven National Laboratory and the Stanford Linear Accelerator Center, and the heavier particle "Upcyron" (phonetic), discovered later by the Fermi National Accelerator Laboratory, made clear what nucleons and mesons are.

Specifically, the " J/ψ " meson has come to be interpreted as in a state wherein quark having the fourth flavor, charm, is bonded with the anti-quark. The other "Upcyron" meson is identified as the fifth quark of the similar world body having the fifth flavor, bottom.

Quarks u, d, s, c, b , in order of lightness of mass, have been discovered, and these particles and anti-particles make up pairs. There are more than three of these pairs.

Despite laborious search in America and Europe, a partner making a pair with charm has not been discovered yet. The reason is because the partner is confined in the existing accelerator since its mass is heavier than the maximum energy of the existing accelerator. That is why we are hopeful of discovering the sixth quark with TRISTAN, which can produce higher energy than that of the existing accelerator.

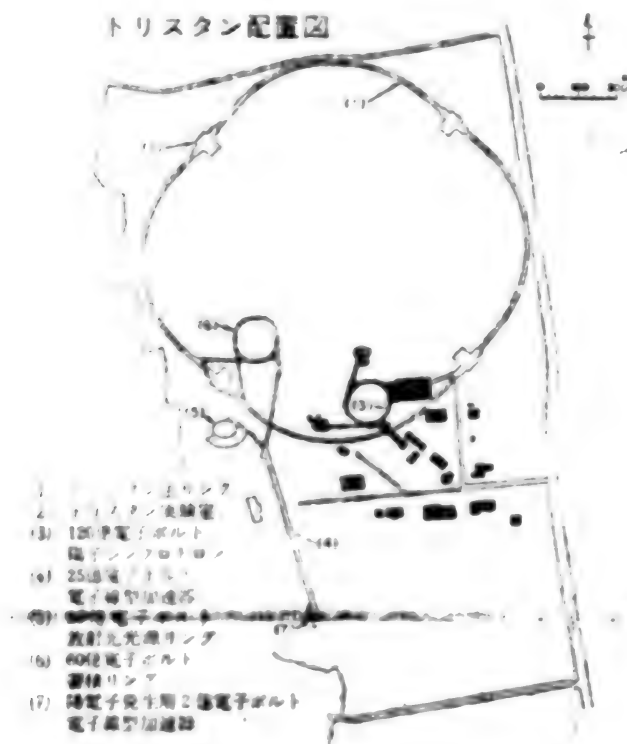
Each of 10 GeV electrons move in circles in the main ring of TRISTAN (circumference 300 meters, circumference about 3 km), 0.29 GeV energy is lost per turn. In order to maintain a stable energy of 30 GeV in circling electrons, the energy loss must be continuously supplemented.

Therefore, straight sections of about 200 meters are provided in four places in the main ring, and a very long high-frequency accelerator is installed in the ring. These straight sections are joined with circular arcs of 150 meters in radius to close the ring.

High energy electron and high energy positron collision experiments and research are conducted by means of inviting head-on collisions in the center of four test chambers, by passing in the same track, two bundles of respective electrons and positrons facing directly opposite to one another into center directional spins.

When electrons and positrons collide at a very high energy level of 30 GeV each in the main ring of TRISTAN, scattering phenomenon and generation of various particles are observed in the ring. The state of the particles involved in the reaction and the behavior of the interactions are hidden in the way these phenomena are manifested and the type and mode of particles that subsequently scatter in all directions.

To collect such data and to analyze it thoroughly to probe into the secrets of the law of nature are the art and tools of high energy physics.



TRISTAN Layout

(Ref.)

1. TRISTAN main ring
2. TRISTAN test chamber
3. 12 billion electron volt positron synchrotron
4. 25 billion electron volt electron ray type accelerator
5. 2.5 billion electron volt radial light source ring
6. 6 billion electron volt storage ring
7. 200 million electron volt electron ray accelerator for generation of electron

Accelerators of "TRISTAN" are comprised of the following four parts:

1. A 400 meter 2.5 GeV electron linear accelerator.
2. An approximately 80 meter 0.2 GeV positron generation linear accelerator.
3. A storage ring of about 120 meters in diameter to accelerate respective 2.5 GeV electrons and positrons to 30 GeV.
4. An approximately 970-meter diameter main ring to obtain 60 GeV from the collision of 30 GeV electrons and positrons running in counter.

Positrons of 0.2 GeV produced in a positron generation linear accelerator are introduced to the 400-meter linear accelerator of the radial light test facility from a part of the line to be accelerated to 2.5 GeV.

Electrons and positrons accelerated to 2.5 GeV in the 400-meter linear accelerator will be transferred to the storage ring and spun in the same direction until they are accelerated to 30 GeV.

Electrons and positrons accelerated to 30 GeV will be introduced to the main ring and spun counter to each other. The two are brought into collision to generate an energy exceeding 60 GeV.

The construction of these accelerators of "TRISTAN" is being steadily continued. A rough finish in FY 85 is targeted.

A "2.5 GeV electron linear accelerator" has been completed in the radial light test facility.

A "0.2 GeV positron generation linear accelerator" is being constructed according to the FY 82-83 project.

A "storage ring" is being constructed effectuated by the FY 81-82 project. The 4.5-meter deep tunnel for the ring has already been completed. The main tunnel is currently being constructed.

The instruments are currently being carried into this tunnel and installation works will start from November and end in February next year. Vacuum chamber and pipe will be installed next April-June, piping and power works in March to June, control related wiring in June-October and beam incidence tests will start in November.

The construction of the "main ring" is appropriated in a FY 83-85 project. The construction will start after the ground-breaking ceremony in September of this year. The main ring will be built 31 meters below the surface. The construction of the southside underpinning is expected to be very difficult. It will be laid below the booster of the already built 12 GeV positron generation and the power source of the main ring.

The tunnel construction of the main ring is planned as follows: construction of the west, north or east side in summer of 1983 to spring of 1984; underpinning from February to December of 1984; the rest in spring of 1984 to the beginning of 1985. Tunnel construction requires approximately 8 months while underpinning work needs about 11 months.

As for the accelerators of the main ring, electromagnets have already been ordered to meet the plan to manufacture and install them in FY 82-84. Likewise, vacuum ducts have been also ordered to prepare for manufacture and installation scheduled in FY 82-84. Control computers are partially purchased to accommodate the schedule to furnish computers in accordance with the FY 82-85 project. High-frequency accelerators will soon be ordered as it is planned to manufacture and install them in FY 82-85.

"Test chambers" will be built in four locations, northeast, northwest, southwest and southeast of the main ring.

Already two test groups, TOPAZ and VENUS have been organized. The southwest and northeast test chambers will be built in January to the end of 1983, while the center of the track detector will be the three dimensional track detector (time projection chamber TPC) to be manufactured by the American Lawrence-Barkley Laboratory based on U.S.-Japan high energy physics corporation. These two test groups hope to discover topquark and G-zero quark.

TOPAZ will use a three dimensional track detector (TPC time projection chamber) in the center of the track detector. This detector will be produced by the American Lawrence Barkley Laboratory based upon the U.S.-Japan high energy physics joint research work. Also, solenoids (superconductive electromagnets) for the track detector have already been ordered.

"TOPAZ" is the name for the joint test group made up of researchers from the High Energy Physics Research Institute, University of Tokyo, Tokyo University's Institute of Atomic Nucleus, Tokyo University of Agriculture and Technology, Nagoya University, Nara Women's University, Osaka University (Basic Engineering), Osaka City University and Lawrence Barkley Laboratory. The group name was borrowed from the name of a universal spectrometer designed to cover extensively physics in the energy domain of TRISTAN.

The VENUS group used a drift chamber in the center of the track detector and a liquid argon detector as a shower counter.

VENUS is the name for the joint test group made of researchers from the High energy Physics Research Institute, Kyoto University, Osaka University, Hiroshima University, Tohoku University, and Tokyo University of Agriculture and Technology. It is an abbreviation for Versatile Economical and Novel Universal Spectrometer, the primary objective of which is to complete TRISTAN accelerators and to produce simultaneously a detector which functions faithfully.

What kind of experiments to be conducted by "TRISTAN" will be decided by the "TRISTAN Physical Test Committee" composed of researchers inside and outside

the High Energy Physics Research Institute (including two foreigners, chairman of the committee, Toshi Ozaki, chief for physical research, High Energy Physics Research Institute).

This committee is generically called T-PAC.

T-PAC adopted TOPAZ and VENUS' projects in the primary selection, but the final proposal will be compiled by 15 February next year. Likewise, the remaining two test chambers (northwest and southeast) will be attended with soliciting letters of intent from home and abroad till the end of February next year.

The following discoveries and precognition can be cited as the results of experiment and research expected from the completion of the world's largest electron-positron collision type accelerator, "TRISTAN."

1. Discovery of topquark (the sixth quark).
2. Discovery of gluon jet serving as an adhesive that connects quarks.
3. Precognition of G-zero (Z_0) quark.
4. Discovery of higgs [phonetic] particle.
5. Discovery of heavy lepton.
6. Precognition of the new generation considered to be the next quark after the quark known today.

The human race evolved from a primitive age to the atomic and nuclear age and will advance into the next age, the elementary particle age.

The "TRISTAN Project" is truly the first accelerator project of the elementary particle age.

"TRISTAN" is the main character in the first opera by Wagner, the passionate knight in a lyric of the middle age.

A German who predicted the existence of the basic particle "quark" named it "quark" from a verse describing the quark by James Joyce.

When the "TRISTAN Project" is successfully put in effect, the passion of the passionate quest of men to discover the nature of the unknown world and the laws that govern it such as topquark, will be evermore vigorously carried out in the high-energy physics research institute in the backdrop of the beautiful natural panorama at the foot of Mt Tsukuba.

Table: World's Major Storage Ring

世界の主な貯蔵リング					
(1)	(2)	(3)	(4)	(5)	
名 称	研 究 所	粒 子	衝突エネルギー (GeV)	運転開始年	
S P E A R	SLAC(米)	(6)(7) 陽電子・電子	8.4	1972	
D O R I S	DESY(独)	(8)(9) 電子・電子	9.0	1974	
P E T R A	DESY(独)	(10)(11) 陽電子・電子	38	1978	
C E S R	コーネル大(米)	(12)・	16	1979	
P E P	SLAC(米)	(13)・	36	1980	
TRISTAN	高エ研(日)	(14)・	60	1986	
L E P	CERN(スイス)	(15)・	172	1988	

Key:

- | | |
|----------------------|---|
| 1. Name | 9. Electron electron |
| 2. Laboratories | 10. Germany |
| 3. Particles | 11. Electron positron |
| 4. Collision energy | 12. Cornell University (America) |
| 5. Year of operation | 13. America |
| 6. America | 14. High-Energy Physics Institute (Japan) |
| 7. Positron electron | 15. Switzerland |
| 8. Germany | |

8940

USO: 4306/095

SCIENCE AND TECHNOLOGY

NEW STRATEGIES OF SHIPBUILDING INDUSTRY DISCUSSED

Tokyo SEIKEIJIN in Japanese Mar 82 pp 169-175

[Text] Sudden Upsurge in Business Appears After Improved Cost Accounting

The shipbuilding industry found a way to restore itself boosted by the rebuilding of the merchant marine, which had been completely flattened by the defeat in World War II. In the course of time, in the background of the international tanker construction boom associated with the increase in demand for oil in use in energy and chemical raw materials, in concert with the promotion of oil resource development concentrated in the Middle East and Africa and the expansion of trade, the Japanese shipbuilding industry worked hard studying design and production technology and expanding production facilities. As a result, it led Japan to become the world's strongest and largest shipbuilding country.

This achievement was realized through improvement of the shipping balance by the strengthening of domestic bottoms, that is, by reducing the outflow of foreign currency and developing technology and a low-cost mass shipbuilding capacity.

The shipbuilding industry's contribution to today's Japanese economic growth cannot be easily measured, but it is known that it aggressively sought ship export orders for the acquisition of foreign currency.

The shipbuilding industry, which had shown continuous growth and had taken large strides as the leader of Japanese primary industries, was drawn into a precarious situation such as to leave it helpless in the face of the rimmer of an operational pinch in FY-77 and FY-78, when ship export orders rapidly declined after the peak achieved immediately before the first oil shock in the autumn of 1973.

However, orders received recovered in FY-79 and FY-80, and the work order in FY-80 bounced back to gross tonnage of 11.64 million tons. Many companies have begun to show a marginal profit, partly because of the rising ship price following the formation of a cartel.

The turnaround of an industry such as this is explicitly shown in a report prepared by the Shipbuilders' Association of Japan.

As indicated in the accompanying table, the orders received took an upturn after hitting rock bottom in FY-78. The following are reasons which may account for the upturn: the worldwide trend manifested by the replacement of old tankers with new ones rather than the remodeling of the old ones to meet the stricter sea water protection regulations of the IMCO (Inter-governmental Maritime Consultative Organization) and the governmental shipbuilding promotion policy for the shipbuilding industry accommodating the increase in demand for bulk carriers (transport vessels for bulk cargo) attributable to the coal demand increase in reaction to the high cost of crude oil.

The cost of accounting has also improved. Business results are rapidly improving in the shipbuilding companies headed by the six major shipbuilders, facilitated by the unexpected success in soliciting large-scale voluntary retirement since FY-78, when a reduction in force policy was implemented based upon the gloomy future outlook of declining work on hand; the recovery of ship prices which resulted both from implementation of operational restrictions by the cartel with the approval of the Fair Trade Commission and from approval of extension of the cartel until March of this year; and the efficacy of the land machinery sector expansion policy.

"Cloud" Hanging Over Export Ship Orders Receivable

The shipbuilding orders received, which steadily increased in FY-79 and FY-80, maintained the high level of about 1 million gross tons in average monthly orders from April to July in FY-81. However, the orders received then dropped in half, to a monthly average of about 500,000 gross tons, except that the statistics showed a recovery to 689,000 gross tons for the month of October. This was attributable to the influx of ships approved for the 37th planned shipbuilding project, an increase in domestic orders received, while ships for export remained at around 212,000 gross tons. The export ship orders received since then have also been stagnating; the statistics of this particular category show a decline to almost as low as one-third the average of the first half year in 1981, as seen in the 2-month average of approximately 250,000 gross tons calculated for October and November, and particularly in the showing of 204,000 gross tons for December.

As indicated in the table, the ratio of export ships to the total orders received is over 70 percent. Unless the export ship orders receivable increase again, the shipbuilding industry is destined to be exposed to the danger of idling once more.

The question we must ask and look into is whether the future export ship orders receivable will increase or shift to a lower level. There were 11 international shipbuilding solicitations in which Japanese shipbuilders participated from January to September last year, amounting to a total of 34 vessels offered for bidding. Nevertheless, Japanese shipbuilding companies failed to get an order for even one vessel. They cited as an excuse the strong competition from Korea and European nations, which had strengthened governmental aid to the domestic shipbuilding industries.

However, as far as Korea is concerned, it is highly questionable that it can make a profit from the orders received. True, at one time it had low wages, but that has been corrected. It is more likely that it received orders without thinking of profits. The same is true with the European nations. There is no way they can actually earn a profit since their business is operating on the basis of governmental aid. Furthermore, the Korean bid was certainly advantageous as it accepted orders in dollars, whereas the Japanese shipbuilding industry adhered firmly to contracts in yen. Of course, the Japanese shipbuilding industry cannot, in one way, agree to accept the policy of other nations' shipbuilders when disadvantages in receiving the orders are obvious, since the industry has put its house in order by holding fast to the policy of stressing cost accounting while ensuring almost 2 years' worth of work.

Indeed, it is undeniable that Korea obstructed the receipt of export ship orders by the Japanese shipbuilding industry by aggressively taking orders in dollars, whereas Japanese shipbuilders did not yield to the requests for contracts in dollars from foreign ship owners. However, it is necessary for the Japanese shipbuilding industry to avoid the risks learned from the past bitter experience of receiving painful blows from the fluctuating foreign exchange market.

The Japanese shipbuilding industry primarily accepted orders in dollars before 1969, but it decisively went over to taking contracts in yen for the first time in June 1969 with the anticipation of a future stronger yen, reflecting the progress of the Japanese economy which was strengthening the value of the yen.

The future prospects envisioned by the shipbuilding industry were quite accurate. In the dollar shock of 1971, an enormous loss, a \$5 billion exchange loss, was incurred in total among the shipbuilders. Since this experience, contracts for export ships have been mainly handled in yen. For example, contracts in yen claimed 97.3 percent in FY-82 and had grown to February 1981.

Large Makers Compete on Basis of Aggregate Power

Although it is true that the large shipyards presently have approximately 2 years' worth of work securely locked, the shipbuilding industry as a whole is definitely expected to wind up having less than 10 million man-hours of work on hand at the end of FY-81. In addition, if the present trend continues, export ship orders receivable will inevitably reach less than 4 million man-hours. Also, in the arena of domestic ships, new construction of vessels will certainly decline, because the interest subsidy for planned construction is mainly for large vessels will be discontinued starting with the 1981 project. It is therefore estimated that the orders receivable will be 3 million man-hours combining both domestic and foreign orders. This figure indicates a quantity of work insufficient for 1 year's operation under the present operational system. Except for major companies with plenty of orders received, idling of production might unfortunately occur.

In view of these indicators, the issues facing the shipbuilding industry are focused on two points: a return to the practice of accepting orders based on dollars and the extension of the cartel which restricts an operation to an average of 51 percent of the capacity industry-wide.

Of course, some large shipyards can get through this difficulty by new ship orders receivable, or else they can cover the deficit in orders by the aggregate power created by the expansion of their land machinery sector, so their business outlook cannot be explained in simple generalizations.

Getting back to the previously described two points which are the current issues, receiving orders in dollars means too great a risk considering that it takes 2 years from the beginning of negotiations to the conclusion of a contract in a shipbuilding deal and that there is a financial climate which inevitably points to a higher yen in the near future, although recently the yen has once again been in a declining trend reflecting the rising U.S. prime interest rate as a transition from a temporary tone set for higher yen. Exchange fluctuation insurance is available, but the insurance burden charge is too high to make it worthwhile. Besides, the amount of money involved is too large to be considered for an insurance contract, and even if insurance could be collected, it would not be of great benefit, since the payment would be deferred an average of 2.5 years.

Those are the facts, but if some of the makers give in and accept orders in dollars out of desperation to receive export ship orders, then the foreign ship owners may impose orders in dollars on all the rest, citing these cases as precedents.

The Koreans resorted to the weapon of accepting export ship orders in dollars, which certainly had an impact on Japanese export ship orders receivable. However, Japan cannot yield easily to contracts in dollars as the truth of the matter is that there is quite a big difference between the Korean economic situation and the rate outlook and the Japanese economy and yen rate future prospects. If, putting discretion aside, the Japanese shipbuilding industry were determined to take risks rather than to allow idling, there should be no problem for it to take orders away from Korea, as it is known for unparalleled technical excellence and accuracy of delivery dates.

The cartel has been extended once, and it is scheduled to be terminated in March 1952. It would be a natural course of action to extend it again, taking a serious view of commercial profits, in order to maintain control over unreasonable orders receivable. Considering the work available and the rising profit margin at present, it will be interesting to see what decision the Fair Trade Commission makes.

As described above, the outlook for the future is cloudy. However, large corporations have pushed forward their own development of ship types for new fields and they have promoted a policy of riding out the difficulty by means of multi-division operations. Let us look at the present conditions and the future prospects of shipbuilding companies.

Mitsui Shipbuilding and Engineering Co., Ltd.

This is the core of the Mitsui heavy industry group. The weight of the shipbuilding sector is heavy, ranking next to Sasebo Heavy Industries. Recovery of the shipbuilding sector would immediately be reflected in the business results. Also, structures for ocean projects have continually been expanded and have contributed to the corporate profits. The year ending in March this year showed large revenue and profit increases because of the general rationalization effect, cheap materials and foreign exchange rate. The company will increase dividends starting from the interim settlement in September, and it is scheduled to pay a dividend of 5 yen/year.

The newly built Ohita Division has started full-scale operations as a specialty plant for large iron and steel structures. By making reduced-value entry of profits from selling idle real estate in Chiba and Okayama Prefectures, it has facilitated a system to support the starting of the Ohita Division. Also, the reduced-value entry has benefited the expansion of land machinery plant strategic products such as mobile cranes and oil-raising rigs.

In the shipbuilding sector, the future full-scale construction of LHC ships and SSC ships will be worth watching. Regarding SSC ships in particular, Mitsui Shipbuilding and Engineering is expected to be the sole contractor for all of the new ship orders, as it monopolizes this field.

The SSC is a semi-submerged catamaran. Mitsui Shipbuilding and Engineering has succeeded for the first time in the world in practical production of this ship; it has already delivered one to Tokai Kisen Co. as a fast passenger ship and another to the Fourth District Port Construction Bureau of the Ministry of Transport as a survey and observation ship.

The SSC is not a simple catamaran, but has a torpedob-shaped semi-submerged portion (low hull) below the surface and a hull that sits on the water. The hull and the semi-submerged portion are joined by a streamlined strut.

The main characteristic of this ship is that it is not affected by waves. Because of the low hull, the strut is streamlined and waves do not hit the strut. The waves only hit the hull and have nothing to do with the strut, which therefore experiences little shock and roll. The ship is also equipped with a computer-operated fin-stabilizer which further reduces the roll.

Thus, the ship simultaneously obtains high speed and rides smoothly without being troubled by engine noise and vibration. In addition, it has a large deck space. With these features, the ship is expected to be useful for extensive applications development in addition to being used as a fast passenger ship and a survey ship (already delivered). The Defense Science and Technology Agency and the Center for Maritime Technology have decided to embark upon the development of the "SSC-type vessel" as a diving technology making it possible to stay as long as a month in water 700 meters deep.

The SSC has been adopted as a mother ship; it will be equipped with a DDC (deck decompression chamber) to facilitate a diver becoming accustomed to underwater and surface atmospheric pressures, and an SDC (underwater elevator) to carry the diver into the sea. The SSC weighs 2,800 gross tons and the construction cost including all devices is 265 million yen. It is expected to be completed in 1985.

Thus, the multiple applications development of the SSC, which had been contemplated for some time, has taken its first step forward. The SSC is expected to support one wing of the advancement of the shipbuilding sector alongside the LNG ship.

Hitachi Shipbuilding and Engineering Co., Ltd

This is a general heavy machinery maker of the Sanwa Bank group. Based on sales, the shipbuilding sector accounts for 31 percent, including both newly built ships and repaired ships, followed by the machinery sector with 25 percent, the plant sector with 14 percent, the iron structure and environmental sector with 8 percent, and other sectors accounting for 22 percent.

Both the shipbuilding and land machinery sectors have encountered difficulty in increasing orders receivable, which simply reflects their persistence in upholding a policy attaching importance to commercial profit. However, shipping is improving due to the rich reserve of orders received. The profits from newly built ships in the shipbuilding sector have become favorable, and revenue increases and operational profits growth greatly exceeding those of the first half period of FY-81 are anticipated in the second half period. The operational profits throughout FY-81 will fall short of the past peak of approximately 14.7 billion yen earned in the fiscal year ending March 1974, but it will definitely be able to match the 12-billion-yen mark recorded in the term ending March 1977. With the bright prospect of being able to surpass the past peak operational profit of 20 billion yen in the next term, the company has increased dividends by 2 yen, to 5 yen annually.

Also, celebrating its 100th anniversary, it is hoped that it will give a commemorative dividend at the end of the term.

In the field of marine structures, in addition to its semi-submersible oil excavating device, it has imported technology for a ship-type rig oil excavating device essential for deep water seabed oil field excavation from the Dutch shipbuilding and engineering company, Gusto Engineering. This technology allows excavation regardless of the depth of water and can accommodate the increasing trend of working deeper and deeper in the seabed oil fields for excavation. This type structure will be used for future development; it is expected to grow into a big money-making project since this product, when completed, combined with existing products can be sold for use in any seabed oil field development work.

Incidentally, the activities relating to plant export agreements are lively. Last year they accounted for large deals such as the 39-billion-yen fertilizer

plant for Indonesia which is a joint project with Mitsubishi Corporation, Ltd., and the 51-billion-yen continuous casting facility for Mexico were completed. This is a consortium formed together with Mitsui and Co and Demark [Danish] Ltd.

Mitsubishi Heavy Industries, Ltd

This is the largest heavy industry company in Japan, and its name is known all over the world. Shipbuilding, aircraft, defense machinery and equipment and prime motors reflect a traditional high technology on a scale that is exclusively at the top in market share. Lately, it has climbed to the top in atomic power, and it is also swiftly moving into the expansion of chemical plants.

The shipbuilding sector ranks at the top in industry share, but this sector combined with iron structures accounts for 22 percent, while the next to 32 percent for prime motors, and is followed by 14 percent for machinery, 8 percent for chemical plants, 7 percent for aircraft and vehicles, and 17 percent for construction machinery, engines, and machinery and cooling/heating machinery combined.

With this aggregate power, the business scale is continuing to expand steadily, but profits are low, although stable, because of the market competition among sectors. Improvement of profits is the issue, and the management plans to achieve a sales increase of 1.5 times in FY-83, and a simultaneous raising of the profit rate.

Now, in the shipbuilding sector, earnings have recovered and there are many unfilled orders. For the time being, there is no worry about a shortage of work. The building of LNG ships has been added. Likewise, it is expected that warship orders receivable from the Defense Agency will increase in line with the policy to augment the defense capability.

However, Mitsubishi's undeniable strength lies in the fact that its various divisional business activities can absorb the loss of work in the shipbuilding sector if that should occur. In the aircraft sector, it maintains full-scale export of the F-15, the P-3C and the domestic-developed commercial jet "X-300", and it has also developed a future aircraft CCV (Composite Cargo Vehicle), which is drawing worldwide attention. Realization of this is eagerly awaited, as it is regarded as maintaining the world's highest standard.

Also, the development of defense machinery and equipment such as tanks and missiles, as well as atomic power and robots, contributes to the expansion of a scale up.

Kawasaki Heavy Industries, Ltd

Kawasaki is the general heavy industry company which ranks next to Mitsubishi Heavy Industries and stands shoulder to shoulder with Ishikawajima Harima Heavy Industries Co, Ltd. In sales, newly built ships and prime motors combined account for 26 percent, and this sector is characterized by the construction of the LNG ship, which was awaited with great expectations.

Last fall, the company delivered to the Liberian Gola Gas Cryogenics Company the "Gola [phonetic] Spirit" (dead weight capacity 69,994 tons), which was the first Japanese LNG ship. This ship can transport not only LNG (liquefied natural gas), but also LPG (liquefied petroleum gas).

This ship was built by using spherical tank system technology imported from the Moss Company of Norway. A second ship order was received from the previously mentioned Gola Company, and the construction is scheduled to be completed by December this year. Also, domestic use orders have been received in relation to the 37th planned shipbuilding project. All indications point to the fact that it has entered a full-scale construction period.

Along with LNG ships, robots are raising the image of the company. As a top industrial robot maker, the company is well advanced in furnishing various types of robots such as painting robots and assembly robots, following in the steps of spot-welding robots. In order to accomplish a rapid expansion of this sector, the company will build a plant for mass production of robots, investing a total of 17 billion yen in the "Seishin Industrial Park" in Kobe City.

The plant will be the largest in the world specializing in robots. This is the first positive move to accommodate the future robot market, which is expected to grow into a 600-billion-yen market in 10 years.

In the aircraft field, the company has also become a primary contractor for traditional helicopters and P-3C's, and it is participating in the F-15 project, which is expected to blossom starting in this fiscal year.

Ishikawajima-Harima Heavy Industries

This company ranks second in the shipbuilding sector, after Mitsubishi Heavy Industries. As a result of a policy which stresses profits, work on hand is plentiful and profitability is improving.

In sales, the shipbuilding sector accounts for 30 percent (newly built ships 20 percent, repaired ships 10 percent); iron manufacturing-metal processing machinery, 6 percent; chemical machinery, 17 percent; boiler-atomic power machinery and equipment, 6 percent; transportation machinery and iron structures, 9 percent; and other sectors, 31 percent. The outlook for orders receivable in the shipbuilding sector is cloudy, but this can be covered by the favorable influx of orders received in the land machinery sector.

Future development can be expected in jet engines, atomic power generation, seabed oil excavators and plants. The field of industrial robots, which was retreating at one time, has been revitalized and is expected to grow into an element supporting the non-shipbuilding and plant sectors in the future. Time will tell whether these hopes will be realized.

In jet engines, this company is unrivaled, while the atomic power generation sector has the advantage of being paired up with Toshiba, with which the

company has a close relationship. In the field of seabed oil excavators, the company has jointly received an order for the world's first rig for frozen seas.

It is targetting sales of 1 trillion yen for FY-85. When this is achieved, the weight of the shipbuilding sector will be further lightened.

Saseho Heavy Industries

Led by the command of President Sumio Tsubouchi, the boss of Chikoku, this company has pursued the goal of rebuilding itself under the aegis of the Kijima Dock group. It finally cleared up the excess debt for the interim settlement of September 1981 in the term ending in March 1982, and it is expected to clear up the loss carryover for the interim settlement of September 1982 in the term ending in March 1983.

In the case of this company, the sales percentage distribution is 51 percent for newly built ships, 26 percent for repaired ships, 12 percent for iron structures, 10 percent for machinery, and the remaining share for other sectors--which clearly indicates a business specializing in shipbuilding. Therefore the building trend in the shipping world directly affect the business results. However, the company has ensured one and a half year's worth of work as it received seven new shipbuilding orders by September 1981 and also seven bulk carrier orders by the end of last year.

Machinery such as shipboard boilers and winches are supplied to the Kijima group, and iron structures are supplied locally. The future direction of growth is a question mark.

For the time being, it is maintaining a policy of singlemindedly reinforcing the shipbuilding sector; it will be interesting to see how it will perform after it clears up the loss carryover.

Sumitomo Shipbuilding and Machinery Co., Ltd

In sales, the shipbuilding and marine sector accounts for only 22 percent, but the company inherited a high level of technology in the shipbuilding field. The shipbuilding sector has recovered from a deficit and it now has increasing orders receivable. However, with the outlook for strong growth in other sectors, the weight of this sector continues to be on the decline. Sea development is being explored with a positive policy and is thought to have a promising future.

In the land machinery and plant sectors, it is very strong in iron manufacturing machinery and cargo transporting machinery--traditional from the days when this company was still called Shikoku Machinery. Its transmissions and decelerators are world renowned, and the company is in a position to be able to make up fully for a business slowdown in the shipbuilding sector if it should occur.

In the machinery sector, continuous casting facility exports have been expanded, and exports of desalinization systems, injection molders and printing machines are considered promising. It has also newly entered the mechatronics field, and it is pursuing the development of industrial robots. It will be interesting to see how it does in this field, as well.

Changes in Orders Received and Work on Hand (unit 10,000 gross tons)

<u>Year</u>	<u>Orders received</u>	<u>(Export ships)</u>	<u>Work on Hand</u>
1965	760	540	1,045
1966	1,042	787	1,414
1967	905	620	1,548
1968	906	589	1,652
1969	1,328	867	2,077
1970	1,664	1,256	2,687
1971	1,493	722	2,963
1972	2,142	1,777	3,757
1973	3,379	2,771	5,620
1974	935	569	4,622
1975	850	690	2,851
1976	842	683	1,346
1977	495	369	707
1978	322	194	531
1979	894	606	910
1980	929	645	1,164

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